DEPARTMENT OF MECHANICAL ENGINEERING
OBE PHILOSOPHY

INDEX

STELLA MARY'S COLLEGE OF ENGINEERING

1. ABOUT MECHANICAL DEPARTMENT

The Department of Mechanical Engineering has been in existence since 2013 with the intake of 60 students. The department has excellent infrastructure by keeping on par with the latest trends. The Department is grown into a full-fledged one with well-equipped lab facilities, Infrastructure and faculty members of various specializations. The faculty members are not only committed to the teaching profession but also involve themselves in research and constantly, filing patent publish papers in conference proceedings, International and National Journals with respect to their field of specialization. The department has been producing excellent results with distinction in the university examinations consistently.

The Department provides high quality education along with discipline. The faculty members make it possible to give individual attention to the learners and to motivate them to achieve their professional goals. The curriculum structure of the department is designed to meet the present day requirement of Industries and corporate sectors. The interaction between the staff and students is excellent and all the laboratories are well equipped as per the requirements of the curriculum.

2. ROADMAP FOR RECOGNITION: THE WAY FORWARD

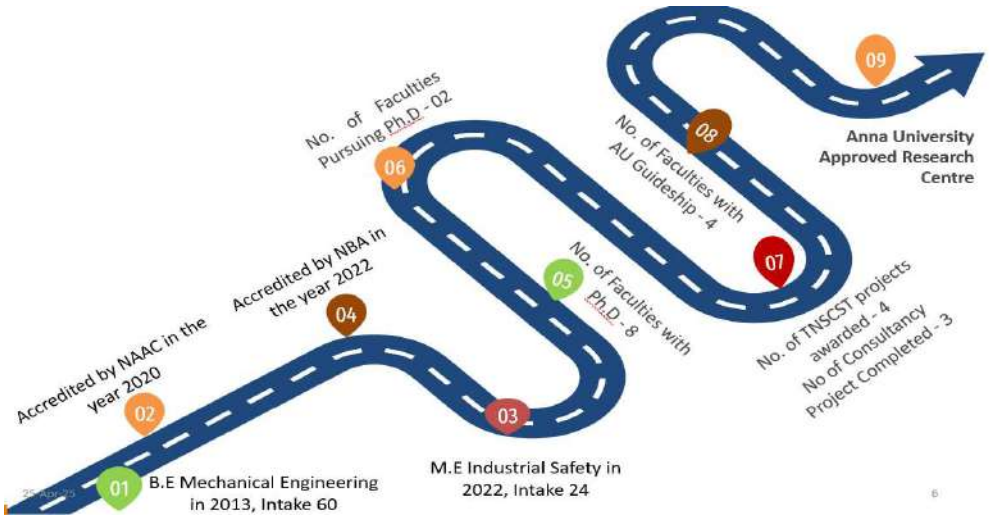


Figure 1. Roadmap for Recognition

3. VISION AND MISSION OF THE INSTITUTE

VISION

To be a beacon of academic excellence, empowering future innovators with technical mastery to harness technology for positive global change.

MISSION

MI 1: To Cultivate a vibrant learning environment where students delve into the frontiers of technical knowledge, hone their problem-solving skills, and embrace innovation to transform ideas into solutions that address global challenges.

MI 2: To bridge the gap between technical brilliance and real-world impact by forging strong industry partnerships, fostering cutting-edge research, and nurturing entrepreneurial drive in our students, empowering them to build a better future through technology.

MI 3: To ignite the spark of intellectual curiosity within every student, equip them with the tools and knowledge to become pioneers in their chosen fields, and guide them towards ethical and responsible use of technology for the betterment of humanity.

4. VISION AND MISSION OF THE DEPARTMENT

VISION

To excel in Mechanical engineering by producing skilled, innovative engineers who address societal challenges and develop impactful solutions through research, collaboration, and practical applications.

MISSION

MI 1: To equip students with the knowledge and skills necessary to become exceptional mechanical engineers, capable of solving complex problems and driving positive change through innovation and ethical leadership.

MI 2: To conduct innovative research, develop advanced technologies, and collaborate with industry partners to address critical engineering challenges and build a sustainable

future.

MI 3: To apply engineering knowledge to enhance communities, inspire future generations, and protect the environment through safe and responsible practices.

5. PROGRAM OUTCOMES (POs)

PO1 Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2 Problem analysis: Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3 Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4 Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5 Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6 The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7 Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the

knowledge of, and need for sustainable development.

PO8 Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9 Individual and team work: Function effectively as an individual and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10 Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11 Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12 Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

6. PROGRAM SPECIFIC OUTCOMES (PSOs)

Program Specific Outcomes are what the students should be able to do at the time of graduation.

PSO1 Apply the knowledge gained in Mechanical Engineering for design and development and manufacture of engineering systems.

PSO2 Apply the knowledge acquired to investigate research-oriented problems in mechanical engineering with due consideration for environmental and social impacts.

PSO3 Use the engineering analysis and data management tools for effective management of multidisciplinary projects.

7. PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

Program educational objectives describe the career and professional accomplishments that programs are preparing graduates to attain within a few years of graduation.

PEO1 Effectuating success in careers by exploring with the design, digital and computational analysis of engineering systems, experimentation and testing, smart manufacturing, technical services, and research.

PEO2 Amalgamating effectively with stakeholders to update and improve their core competencies and abilities to ethically compete in the ever-changing multicultural global enterprise.

PEO3 To encourage multi-disciplinary research and development to foster advanced technology, and to nurture innovation and entrepreneurship in order to compete successfully in the global economy.

PEO4 To globally share and apply technical knowledge to create new opportunities that proactively advances our society through team efforts and to solve various challenging technical, environmental and societal problems.

PEO5 To create world class mechanical engineers capable of practice engineering ethically with a solid vision to become great leaders in academia, industries and society.

8. OUTCOME BASED EDUCATION

Outcome-Based Education (OBE) is an educational philosophy where the teaching and learning approach that is based upon a predetermined set of expected outcomes. The term outcomes in this matter would be a set of values or attributes on what a student should acquire upon completion of a certain level of learning. For example, Program Outcomes (PO) would indicate the attribute that a student should have upon graduation. The general approach of the OBE educational framework adopted by Stella Mary's Engineering College consists of the following components.

Figure 2. OBE Structure

9. ATTAINMENT PROCESS OF OBE

The institute adopted OBE in true sense since the A.Y. 2012-13. The attainments are calculated by the direct and indirect assessment tools. The assessment of PO and PSO attainment is carried out using a combination of direct and indirect evaluation methods. Direct assessments include tools like Internal Assessment Tests (IAT), assignments, model tests, semester-end examinations, mini and major projects, technical seminars, and course exit surveys. These tools provide measurable evidence of student performance and learning.

In addition to direct assessments, indirect assessment methods are employed to gather broader feedback on program effectiveness. These include graduate exit surveys, parents feedback, employer feedback, and alumni surveys. These sources offer insights into how well students are perceived to perform in professional environments and how satisfied various stakeholders are with the educational outcomes.

Once all the relevant data is collected, the overall attainment of each PO and PSO is calculated. If the outcomes are found to be attained, they are documented accordingly. However, if the attainment levels fall short of expectations, corrective actions are initiated.

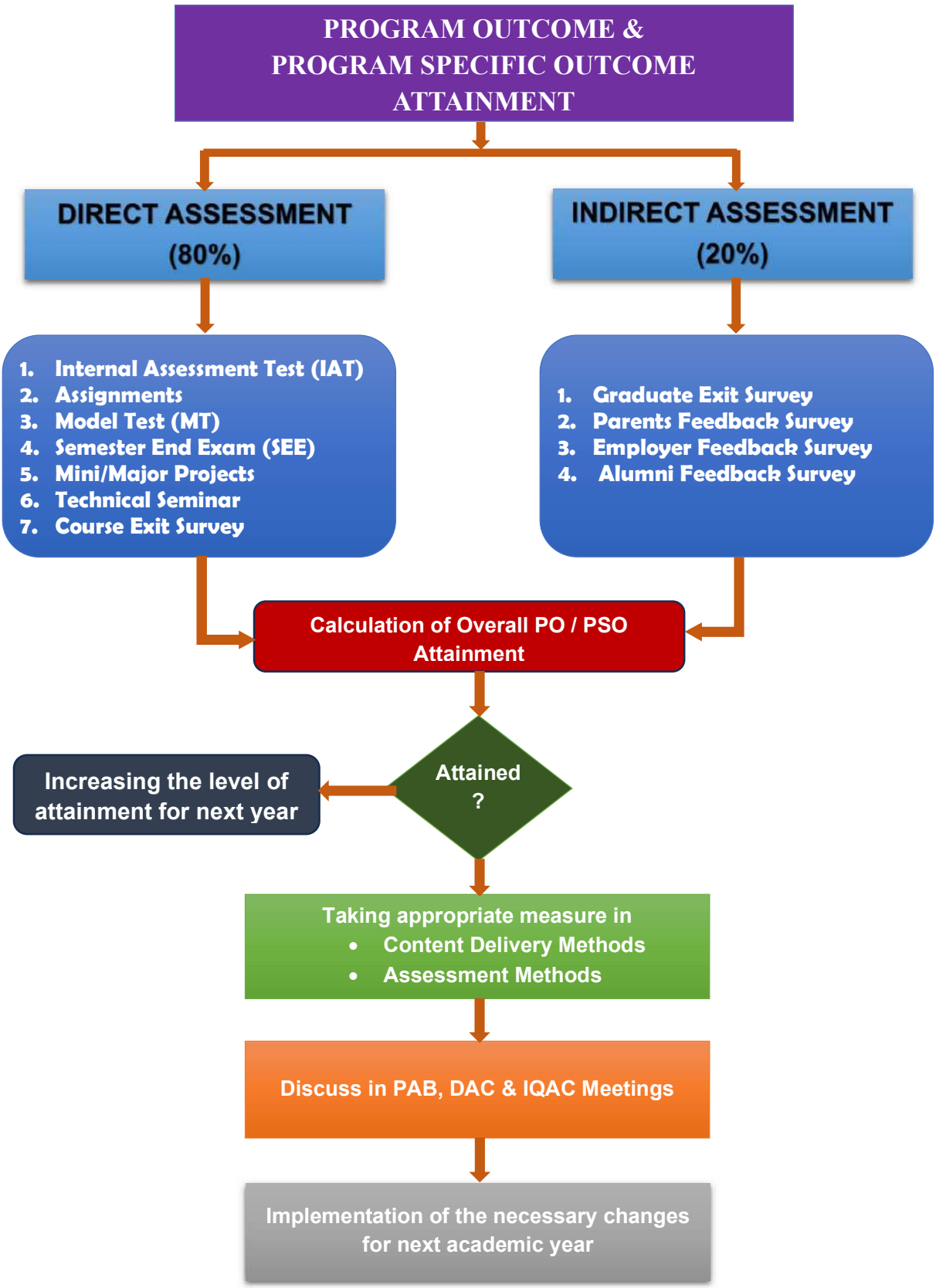


Figure 3. Process of Program Outcome & Program Specific Outcome attainment

These actions typically involve revising content delivery methods and improving assessment strategies. The issues and potential improvements are discussed in institutional bodies such as the Program Assessment Board (PAB), Department Advisory Committee (DAC), and the Internal Quality Assurance Cell (IQAC). Based on these discussions, necessary changes are implemented in the following academic year to enhance the program's effectiveness and ensure continuous improvement.

10. PO DIRECT ASSESSMENT

Direct tools are the assessment techniques that evaluate student performance through various examinations. These assessments include internal tests, assignments, model examinations, practical's, projects, performance in the end-semester examinations and course exit survey. Appropriate weightage is given to both internal and external examination results when calculating outcome attainments. For theory courses, the Continuous Internal Evaluation (CIE) accounts for 60% of the total marks, while the Semester End Examination (SEE) contributes 40%. In contrast, for laboratory courses, mini or major projects, and technical seminars, CIE constitutes 40% and SEE contributes 60% of the total evaluation. Once both components are evaluated, the attainment of Course Outcomes (COs) is calculated using a weighted formula: 80% from the combined result of CIE and SEE, and 20% from a Course Exit Survey.

Internal and external exam assessments of a course are carried using internal assessment test, assignments, reviews, model test and semester end examinations (SEE). Internal assessment tests are conducted three times per semester for theory courses and twice per semester for laboratory courses. Students are also regularly assigned coursework assignment, which they must submit on time. These assignments are thoroughly evaluated by the course coordinator. The model test is conducted at the end of the semester. The mini/major project undergoes three stages of review, each evaluated by the project coordinator.

The Course Exit Survey is a qualitative feedback tool filled out by students at the end of the course. It collects their perceptions on how effectively the course helped them achieve the intended outcomes.

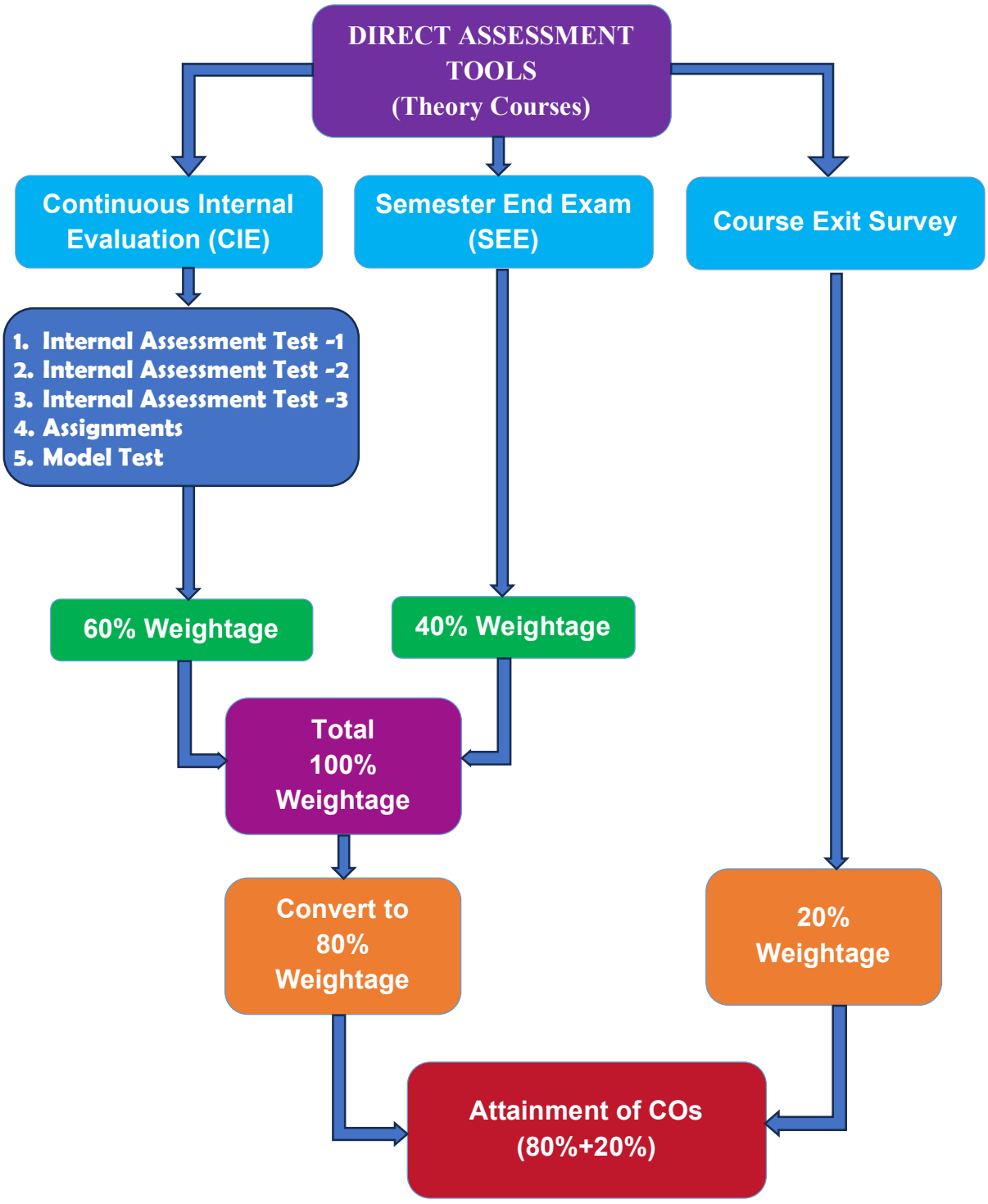


Figure 4. Direct Assessment Process for Theory Courses

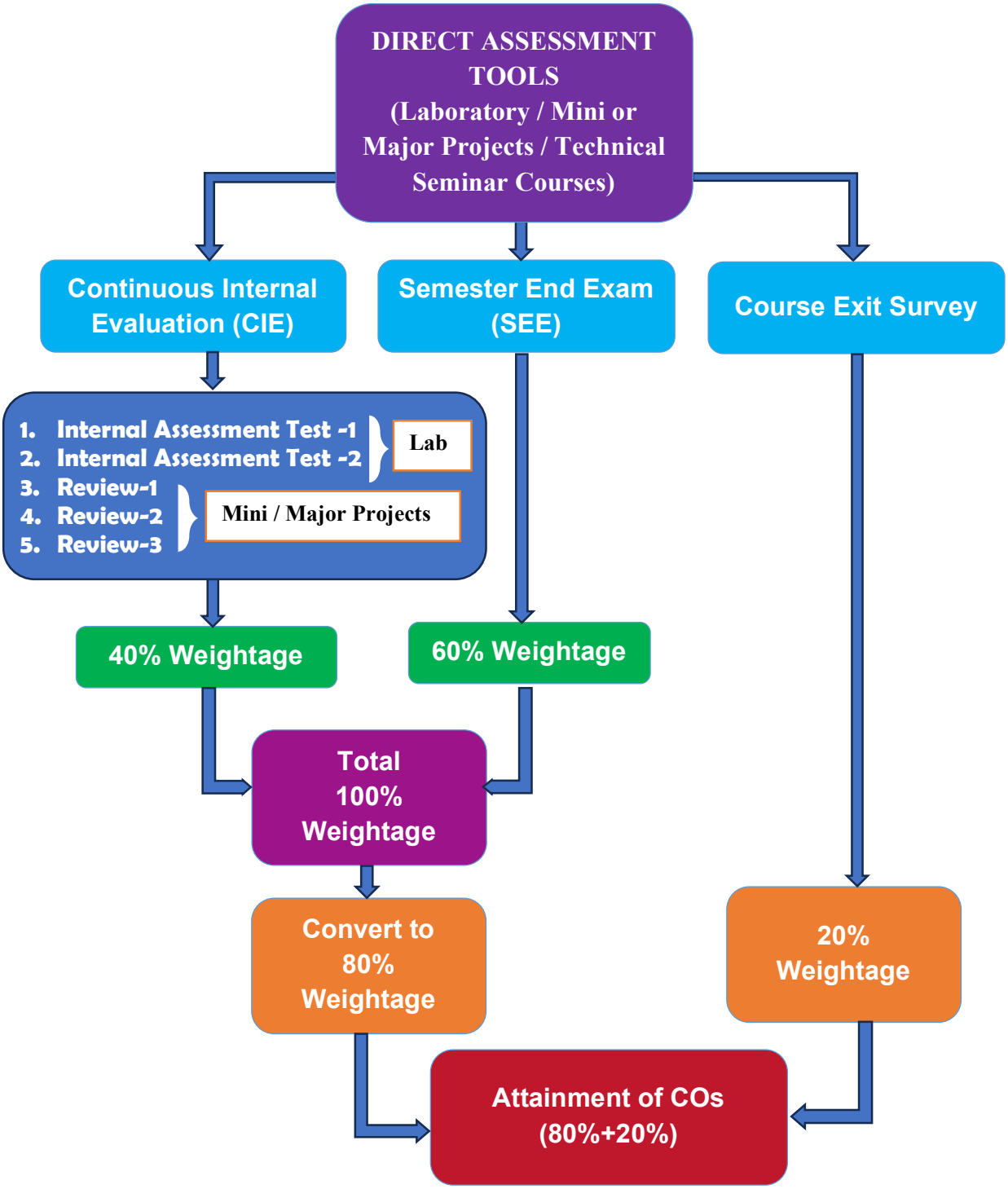


Figure 5. Direct Assessment Process for Laboratory Courses / Mini or Major Projects / Technical Seminar

The Course Outcome may be defined unit wise or on the basis of delivery of contents set by the course coordinator. For each CO, methods of measurement are identified to measure progress of the outcome. Each question in internal assessment tests / model tests / assignment is tagged to the corresponding CO and the overall attainment of that CO is based on average mark set as target for final attainment. The assessment of course outcome is depicted in Figure 4 and 5.

The prescribed procedures for computing the assessments of COs, POs and PSOs with suitable samples are given in this book. Attainment of Course Outcomes (COs) and correlation between the courses and the Program Outcomes (POs) & Program Specific Outcomes (PSOs) are also presented here.

- The COs are framed through discussion with course coordinator, Department advisory committee, and finally approved in BOS meetings.
- The attainment of COs correlates to the attainment of POs & PSOs.
- The program outcomes and program specific outcomes are achieved through a curriculum that offers a number of courses.
- The final attainment levels of POs and PSOs for a batch of students of a branch in all four years indicate the effectiveness of the program implemented.
- Each question in internal assessment test, model test, semester end examination and assignment are tagged to a specific CO.
- The attainment of each CO is computed as the percentage of students above a target level set as the class average mark in that specific question. The overall CO attainment of Continuous Internal Evaluation (CIE) and Semester End Exam (SEE) are separately computed as the average of all attainments of all contributions from all questions in CIE and SEE separately.

11. ASSESSMENT TOOLS AND PROCESS FOR MEASURING THE ATTAINMENT OF COURSE OUTCOMES

For each CO, methods of measurement are identified to measure progress of the outcome. The process of course outcome assessment is based on internal assessment test, model test, assignment, semester end examination and course exit survey. The

processes & tools are used for the attainment of course outcomes are detailed in the following sections.

Continuous Internal Evaluation (CIE):

(i) Internal Assessment Test:- Assessment is carried out following the Internal Assessment Tests, which are conducted three times per semester for theory courses and twice for laboratory courses. The question pattern for assessment is designed as follows: IAT-1 covers 2 Course Outcomes (COs) across 1.5 units, IAT-2 covers 2 COs across another 1.5 units, and IAT-3 covers 2 COs spanning 2 units.

(ii) Model Test:- Model examination is taken to be a tool for the assessment of the attainment of the entire COs for a particular course at the end of the semester. The question pattern covers the entire COs for assessment.

(iii) Assignments:- To assess the student's knowledge of engineering practices, the assignment given for each unit covers each COs is used as a qualitative performance assessment tool.

Table 1. Coverage of COs and mark allotment in total for an IAT/Model/Assignment

COs	IAT-I	IAT-II	IAT-III	MODEL EXAM	ASSIGNMENT	TOTAL MARKS
CO1	Full Unit (26)			Full Unit (17+15*)	At the end of each unit (10)	68
CO2	Half Unit (24)	Half Unit (24)		Full Unit (17)	At the end of each unit (10)	75
CO3		Full Unit (26)		Full Unit (17)	At the end of each unit (10)	53
CO4			Full Unit (24)	Full Unit (17)	At the end of each unit (10)	51
CO5			Full Unit (26)	Full Unit (17)	At the end of each unit (10)	53
Total marks	50	50	50	100	50	

(iv) Assessment of Mini/Major Projects:- The internal mark for the academic project work is awarded based on First review, Second Review, Final Review and Evaluation of the report. It is evaluated based on the rubrics framed by the Project Coordinator and the guide, of the particular project course.

Table 2. Coverage of COs and mark allotment in total for laboratory / Technical Seminar Course

COs	IAT-I			IAT-II			TOTAL
	Day to Day Evaluation	Lab Marks	Viva Voice	Day to Day Evaluation	Lab Marks	Viva Voice	
CO1	2	2	1	2	2	1	10
CO2	2	2	1	2	2	1	10
CO3	2	2	1	2	2	1	10
CO4	2	2	1	2	2	1	10
CO5	2	2	1	2	2	1	10
Total marks	10	10	5	10	10	5	

Table 3. Coverage of COs and mark allotment in total for Mini/Major Projects

COs	Review-I	Review -II	Review -III	Total Marks
CO1	3	3	4	30
CO2	3	3	4	30
CO3	3	3	4	30
CO4	3	3	4	30
CO5	3	3	4	30
Total marks	15	15	20	

Semester End Examinations (SEE):

Semester End Examinations (SEE) are the final assessments conducted at the end of an academic semester to evaluate students' understanding, knowledge, and skills in their enrolled courses.

Table 4. Coverage of COs and mark allotment in total for Semester End Exam

COs	CO1	CO2	CO3	CO4	CO5	Total
Maximum Marks Allotted	20	20	20	20	20	100

Course Exit Survey:

The Course Exit Survey is a qualitative feedback tool filled out by students at the end of the course. It collects their perceptions on how effectively the course helped them achieve the intended outcomes.

The assessment process is focused on the attainment of Course Outcomes (COs) and Program Outcomes (POs) through descriptive examinations. At the beginning of each semester, the expected target levels for COs are set by the Program Assessment Committee (PAC) and the Department Advisory Committee (DAC), based on the attainment levels of the previous batch. Student performance in various examinations conducted throughout the semester for each course is used to compute the attainment levels of the corresponding COs.

12. ASSESSMENT TOOLS AND PROCESSES FOR MEASURING THE ATTAINMENT OF EACH PROGRAM OUTCOME (PO) AND PROGRAM SPECIFIC OUTCOMES (PSO)

DIRECT ASSESSMENT:

(i) The COs of each course are mapped to POs/PSOs with weights of 1, 2 and 3.

(ii) The attainments of the PO/PSO are computed as a weighted average attainment of the COs that are mapped to the given PO/PSO.

INDIRECT ASSESSMENT:

The following indirect assessment tools are used for calculating PO & PSO attainments.

(i) Graduate Feedback Survey

Fifteen questions related to professional, technical, and social experiences gained during the program are presented to graduating students at the end of the semester through a Graduate Feedback Survey Form, aimed at evaluating the attainment of the twelve Program Outcomes (POs). Feedback is measured on a 3-point scale, assigning scores of 3 for Strongly Agree, 2 for Moderately Agree, and 1 for weekly Agree.

These fifteen questions are mapped to both Program Outcomes (POs) and Program Specific Outcomes (PSOs). The attainment levels are then calculated based on this mapping and the feedback received.

(ii) Alumni Feedback Survey

Fifteen questions related to Program Outcomes (POs) are presented to alumni through an Alumni Feedback Survey Form distributed via Google Forms. Feedback is measured on a 3-point scale, assigning scores of 3 for Strongly Agree, 2 for Moderately Agree, and 1 for weekly Agree.

These fifteen questions are mapped to relevant Program Outcomes (POs) and Program Specific Outcomes (PSOs). Based on the responses, the attainment levels are computed accordingly.

(iii) Employer Feedback Survey

Six questions related to the curriculum are presented to employers through the Employer Feedback Survey Form, distributed via Google Forms. Feedback is measured on a 3-point scale, assigning scores of 3 for Strongly Agree, 2 for Moderately Agree, and 1 for weekly Agree.

These six questions are mapped to Program Outcomes (POs) and Program Specific Outcomes (PSOs). The attainment levels are determined based on the responses.

(iv) Parent Feedback Survey

Twelve questions related to expectations from the institute are asked to parents at the end of the semester through the Parent Feedback Survey Form. Feedback is measured on a 3-point scale, assigning scores of 3 for Strongly Agree, 2 for Moderately Agree, and 1 for weekly Agree.

These twelve questions are mapped to Program Outcomes (POs) and Program Specific Outcomes (PSOs), and the attainment levels are calculated based on the responses.

The overall PO & PSO attainments are evaluated by considering:

- 80% of direct assessment & 20% of indirect assessment through various surveys

13. COURSE STURCTURE

Table 5. Course Structure of R17 Regulation (Batch 2019-2023)

Sl. No.	COURSE CODE	COURSE NAME	L	T/P/D	CREDITS
I YEAR- SEMESTER-I					
1.	HS8151	Communicative English	4	-	4
2.	MA8151	Engineering Mathematics - I	4	-	4
3.	PH8151	Engineering Physics	3	-	3
4.	CY8151	Engineering Chemistry	3	-	3
5.	GE8151	Problem Solving and Python Programming	3	-	3
6.	GE8152	Engineering Graphics	2	4	4
7.	GE8161	Problem Solving and Python Programming Laboratory	-	4	2
8.	BS8161	Physics and Chemistry Laboratory	-	4	2
I YEAR - SEMESTER-II					
9.	HS8251	Technical English	4	-	4
10.	MA8251	Engineering Mathematics - II	4	-	4
11.	PH8251	Materials Science	3	-	3
12.	BE8253	Basic Electrical, Electronics and Instrumentation Engineering	3	-	3
13.	GE8291	Environmental Science and Engineering	3	-	3
14.	GE8292	Engineering Mechanics	3	2	4
15.	GE8261	Engineering Practices Laboratory	-	4	2
16.	BE8261	Basic Electrical, Electronics and Instrumentation Engineering Laboratory	-	4	2
II YEAR - SEMESTER-III					
17.	MA8353	Transforms and Partial Differential Equations	4	-	4
18.	ME8391	Engineering Thermodynamics	3	2	4
19.	CE8394	Fluid Mechanics and Machinery	4	-	4
20.	ME8351	Manufacturing Technology - I	3	-	3
21.	EE8353	Electrical Drives and Controls	3	-	3
22.	ME8361	Manufacturing Technology Laboratory - I	-	4	2
23.	ME8381	Computer Aided Machine Drawing	-	4	2
24.	EE8361	Electrical Engineering Laboratory	-	4	2
25.	HS8381	Interpersonal Skills / Listening & Speaking	-	2	1
II YEAR - SEMESTER-IV					
26.	MA8452	Statistics and Numerical Methods	4	-	4
27.	ME8492	Kinematics of Machinery	3	-	3

28.	ME8451	Manufacturing Technology – II	3	-	3
29.	ME8491	Engineering Metallurgy	3	-	3
30.	CE8395	Strength of Materials for Mechanical Engineers	3	-	3
31.	ME8493	Thermal Engineering- I	3	-	3
32.	ME8462	Manufacturing Technology Laboratory – II	-	4	2
33.	CE8381	Strength of Materials and Fluid Mechanics and Machinery Laboratory	-	4	2
34.	HS8461	Advanced Reading and Writing	-	2	1
III YEAR - SEMESTER-V					
35.	ME8595	Thermal Engineering- II	3	-	3
36.	ME8593	Design of Machine Elements	3	-	3
37.	ME8501	Metrology and Measurements	3	-	3
38.	ME8594	Dynamics of Machines	4	-	4
39.	OAI551	Environment and Agriculture	3	-	3
40.	ME8511	Kinematics and Dynamics Laboratory	-	4	2
41.	ME8512	Thermal Engineering Laboratory	-	4	2
42.	ME8513	Metrology and Measurements Laboratory	-	4	2
III YEAR - SEMESTER-VI					
43.	ME8651	Design of Transmission Systems	3	-	3
44.	ME8691	Computer Aided Design and Manufacturing	3	-	3
45.	ME8693	Heat and Mass Transfer	3	2	4
46.	ME8692	Finite Element Analysis	3	-	3
47.	ME8694	Hydraulics and Pneumatics	3	-	3
48.	ME8091	Automobile Engineering	3	-	3
49.	ME8681	CAD / CAM Laboratory	3	4	3
50.	ME8682	Design and Fabrication Project	1	2	2
51.	HS8581	Professional Communication	1	2	2
IV YEAR - SEMESTER-VII					
52.	ME8792	Power Plant Engineering	3	-	3
53.	ME8793	Process Planning and Cost Estimation	3	-	3
54.	ME8791	Mechatronics	3	-	3
55.	OML751	Testing of Materials	3	-	3
56.	ME8073	Unconventional Machining Processes	3	-	3
57.	ME8097	Non-Destructive Testing and Evaluation	3	-	3
58.	ME8711	Simulation and Analysis Laboratory	-	4	2
59.	ME8781	Mechatronics Laboratory	-	4	2
60.	ME8712	Technical Seminar	-	2	1
IV YEAR - SEMESTER-VIII					
61.	MG8591	Principles of Management	3	-	3

62.	IE8693	Production Planning and Control	3	-	3
63.	ME8811	Project Work	-	20	10

Total number of credits to be earned for award of the degree = 184

14. COURSE OUTCOMES

Table 6. Course Outcomes of R17 Regulation Courses (Batch 2017-2023)

Semester-I

Sl. No.:1

HS8151-Communicative English	
CO No	***CO Statement***
C101.1	Read and write complete sentences in sharing information formally and informally.
C101.2	Write freely by enhancing reading skills and writing skills.
C101.3	Develop the basic grammar techniques and utilize them in enhancing language development.
C101.4	Read different types of text and write personal letters and emails.
C101.5	Read the longer text, write dialogues and short essays with rich vocabulary.

Sl. No.:2

MA8151-Engineering Mathematics - I	
CO No	***CO Statement***
C102.1	Describe the limit definition and rules of differentiation to differentiate functions.
C102.2	Discuss differentiation in partial differentiation to calculate the total derivatives, Jacobians and expansion of functions as Taylor's series of the functions of two variables.
C102.3	Explain the basics of integrals using various techniques of integrations and to derive the integration of functions using substitution, partial fractions, integration by parts and to estimate the improper integrals.
C102.4	Apply the knowledge of integration in computing multiple integrals and to obtain area, volume of regions using different techniques.
C102.5	Evaluate the solutions of differential equations using various techniques.

Sl. No.:3

PH8151-Engineering Physics	
CO No	***CO Statement***
C103.1	Apply the concepts of properties of matter in bending experiments.
C103.2	Explain the concepts of waves and optical devices, their applications in fibre optics.
C103.3	Describe the concepts of thermal properties of materials, instrumentation of thermal conductivity of good and bad conductors, their applications.
C103.4	Discuss the concepts of quantum theory and its applications.
C103.5	Analyze various crystal structures, and different crystal growth techniques.

Sl. No.:4

CY8151-Engineering Chemistry	
CO No	***CO Statement***
C104.1	Analyze the type of hardness present in water to treat the hardness producing salts by suitable water treatment techniques.
C104.2	Describe the concept of adsorption and catalysis to apply in various fields.
C104.3	Apply the phase rule in determining the degree of freedom of phase transformation, phases, phase composition.
C104.4	Explain the types of fuels and their combustion.
C104.5	Discuss the various nuclear reactions and energy storage devices.

Sl. No.:5

GE8151-Problem Solving and Python Programming	
CO No	***CO Statement***
C105.1	Develop solutions to simple computational problems using algorithms, flowchart, pseudocode.
C105.2	Construct python programs with conditionals and loops.
C105.3	Assess python program using the concept of functions.
C105.4	Experiment with compound data using python lists, tuples, dictionaries.
C105.5	Evaluating python programs by reading and writing data from/to files.

Sl. No.:6

GE8152-Engineering Graphics	
CO No	***CO Statement***
C106.1	Illustrate the fundamental engineering drawing standards, freehand sketching of basic geometrical construction, visualization concepts and multiple views of objects.
C106.2	Sketch orthographic projection of points, lines and plane surfaces.
C106.3	Develop projections of simple geometrical solids.
C106.4	Practice the projections of sectioned solids and the development of surfaces.
C106.5	Construct the isometric and perspective view of simple solids.

Sl. No.:7

GE8161-Problem Solving and Python Programming Laboratory	
CO No	***CO Statement***
C107.1	Analyze simple python programs by writing, testing and debugging
C107.2	Develop python programs with conditionals and loops.
C107.3	Construct python program using the concept of functions.
C107.4	Test python programs using lists, tuples, dictionaries.
C107.5	Evaluating python programs by reading and writing data from/to files.

Sl. No.:8

BS8161-Physics and Chemistry Laboratory	
CO No	***CO Statement***
C108.1	Determine the chemical parameters of water.
C108.2	Apply conductometric, potentiometric and PH titrations in various fields.
C108.3	Employ the flame photometer and viscometer in identifying the concentration of polymers and environmental samples.
C108.4	Explain in lasers, optics, modulus of elasticity, waves and oscillation, interference and thermal conductivity in experiments.
C108.5	Discuss the bandgap of a semiconductor.

Semester-II

Sl. No.:9

HS8251-Technical English	
CO No	***CO Statement***
C109.1	Read short technical text, newspapers and reproduce definitions, instruction, issue, checklist and recommendations with correct usage of grammar.
C109.2	Interpret charts, graphs, with the correct usage of impersonal passive voice and numerical adjectives.
C109.3	Rearrange sequence words, embedded sentences, describe a process and prepare a technical presentation.
C109.4	Write detailed comprehension, job application letter, resume and write different types of essays with correct usage of clauses.
C109.5	Read short technical text, newspapers and reproduce definitions, instruction, issue, checklist and recommendations with correct usage of grammar.

Sl. No.:10

MA8251-Engineering Mathematics – II	
CO No	***CO Statement***
C110.1	Explain the concept of eigenvalues and eigenvectors and their role in matrices.
C110.2	Discuss differentiation and integration in vectors.
C110.3	Analyze the analytic functions, their properties to derive the various transformation.
C110.4	Apply the knowledge of integration in complex functions and compute the values of integration.
C110.5	Describe the concept of Laplace Transform to derive the solution of differential equations.

Sl. No.:11

PH8251-Materials Science	
CO No	***CO Statement***
C111.1	Explain phase diagrams and microstructural change during the cooling of iron.

C111.2	Describe the iron-carbon equilibrium diagram, T-T-T-diagram for various steels, microstructures of alloys and diffusion in solids.
C111.3	Discuss the various tests to find the mechanical properties of materials.
C111.4	Interpret on dielectric, magnetic and superconducting properties of various materials
C111.5	Summarize the basics of composites, ceramics, alloys and nanomaterials.

Sl. No.:12

BE8253-Basic Electrical, Electronics and Instrumentation Engineering	
CO No	***CO Statement***
C112.1	Analyse DC circuits using mesh, nodal analysis and network theorems.
C112.2	Summarize the basic concepts on AC circuits and wiring concepts
C112.3	Explain the constructional details, types and working principle of various electrical machines.
C112.4	Describe the fabrication, working principle and operation electronic devices.
C112.5	Choose appropriate instrument in measurement of electrical parameters for a specific application.

Sl. No.:13

GE8291-Environmental Science and Engineering	
CO No	***CO Statement***
C113.1	Explain the structure and functions of the forest, grassland, desert, aquatic ecosystems and the values, threats of biodiversity for the survival of mankind.
C113.2	Evaluate the effects and control measures of air, water, soil, marine, noise, nuclear and thermal pollution.
C113.3	Analyze the importance of non-renewable energy sources and renewable energy sources and the role of an individual in the conservation of natural resources
C113.4	Discuss the concepts, methodologies of social issues and the environment
C113.5	Describe the family welfare, human rights and value education.

Sl. No.:14

GE8292-Engineering Mechanics	
CO No	***CO Statement***
C114.1	Describe the vectorial and scalar representation of forces and moments.
C114.2	Apply equilibrium equations in the rigid bodies.
C114.3	Calculate the properties of surfaces and solids such as centroid, first and second moment of area.
C114.4	Determine the dynamic forces exerted in the rigid body using apply Newton's law of motion.
C114.5	Discuss the friction, velocity and acceleration of rigid bodies.

Sl. No.:15

GE8261-Engineering Practices Laboratory	
CO No	***CO Statement***
C115.1	Design and fabricate various carpentry joints like tee, dovetail, cross-lap, mortise & Tenon joints.
C115.2	Design and model arc welding joints like butt, lap & tee joints.
C115.3	Fabricate Electrical and Electronics circuits.
C115.4	Make the models using sheet metal works.
C115.5	Perform machining operations like turning, taper turning, drilling, reaming and tapping.

Sl. No.:16

BE8261-Basic Electrical, Electronics and Instrumentation Engineering Laboratory	
CO No	***CO Statement***
C116.1	Determine the speed characteristics of different electrical machines.
C116.2	Develop simple circuits involving diodes and transistors.
C116.3	Employ operational amplifiers in simple electronic circuits.
C116.4	Illustrate the characteristics of transducers.
C116.5	Experiment with measuring instruments.

Semester-III

Sl. No.:17

MA8353-Transforms and Partial Differential Equations	
CO No	***CO Statement***
C201.1	Explain the concept of standard partial differential equations.
C201.2	Analyze the Fourier series which plays a vital role in engineering applications.
C201.3	Apply the Fourier series techniques in deriving one and two-dimensional heat flow problems and one-dimensional wave equations.
C201.4	Discuss the Fourier transforms and physical problems of engineering.
C201.5	Describe the Z transform techniques for discrete-time systems.

Sl. No.:18

ME8391-Engineering Thermodynamics	
CO No	***CO Statement***
C202.1	Describe the basic concepts of Thermodynamics, laws and Energy involved.
C202.2	Apply the concepts of II Law, Entropy in open and closed systems.
C202.3	Explain the properties of steam, its application and the performance of various thermodynamic cycles.
C202.4	Discuss the characteristics of ideal and real gases.

C202.5	Determine the psychometric properties of gas and air mixtures.

Sl. No.:19

CE8394-Fluid Mechanics and Machinery	
CO No	***CO Statement***
C203.1	Calculate fluid properties and characteristics of flow mathematically.
C203.2	Determine major and minor losses associated with pipe flow in piping networks.
C203.3	Estimate mathematically the nature of physical quantities.
C203.4	Analyze the performance of pumps.
C203.5	Calculate the performance of turbines.

Sl. No.:20

ME8351-Manufacturing Technology – I	
CO No	***CO Statement***
C204.1	Explain various metal casting processes, corresponding defects, advantages and disadvantages.
C204.2	Compare various metal joining processes.
C204.3	Summarize different hot and cold working methods of metals.
C204.4	Explain different sheet metal processes.
C204.5	Distinguish different techniques of manufacturing plastic components.

Sl. No.:21

EE8353-Electrical Drives and Controls	
CO No	***CO Statement***
C205.1	Define the types of electric drives, heating and cooling curves and selection of power rating for drive motors.
C205.2	Interpret basic concepts of different types of electrical machines and their performance.
C205.3	Summarizethe different methods of starting DC motors and induction motors.
C205.4	Explain the conventional and solid-state speed control of DC motor drives.
C205.5	Discuss the conventional and solid-state speed control of AC motor drives.

Sl. No.:22

ME8361-Manufacturing Technology Laboratory – I	
CO No	***CO Statement***
C206.1	Demonstrate the safety precautions exercised in the mechanical workshop and join two metals using GMAW.
C206.2	Make the work piece as per given shape and size using machining process such as rolling, drawing, turning, shaping, drilling and milling.
C206.3	Make the gears using gear making machines and analyze the defects in the cast and machined components.

C206.4	Make surface finish for the components.
C206.5	Determine the Cutting force during cutting operation.

Sl. No.:23

ME8381-Computer Aided Machine Drawing	
CO No	***CO Statement***
C207.1	Prepare standard drawing layout for modelled assemblies with BoM.
C207.2	Model orthogonal views of machine components.
C207.3	Prepare standard drawing layout for modelled parts.
C207.4	Explain conventional representation of machine components and material.
C207.5	Discuss various types of fasteners, keys, fits and tolerances.

Sl. No.:24

EE8361-Electrical Engineering Laboratory	
CO No	***CO Statement***
C208.1	Understand the functions of electrical Machines.
C208.2	Demonstrate the basic working concepts of the various AC and DC motor.
C208.3	Compute performance of motor with various loads.
C208.4	Analysis the speed characteristic of different electrical machine.
C208.5	Understand the working of starter.

Sl. No.:25

HS8381-Interpersonal Skills / Listening & Speaking	
CO No	***CO Statement***
C209.1	Explain the importance of speaking, ask for clarification to improve pronunciation and articulate a complete idea as opposed to producing fragmented utterance.
C209.2	Discuss the process information as part of a simple explanation and compare and contrast information and ideas from multiple sources to converse with reasonable accuracy over a wide range of everyday topics.
C209.3	Practice for accuracy and fluency to deliver a five-minute informal talk by greeting others and inviting and declining an offer, describe health and symptoms.
C209.4	Justify in a group discussion by giving verbal and non-verbal feedback and summarizing academic reading.
C209.5	Interpret formal and informal talk in an academic and business context and group/ pair presentation by giving directions and instructions.

Semester-IV

Sl. No.:26

MA8452-Statistics and Numerical Methods	
CO No	***CO Statement***
C210.1	Apply the concept of testing of hypothesis for small and large samples in real-life problems.
C210.2	Explain the basic concepts of the design of experiments in the field of agriculture.
C210.3	Describe the basic concepts and techniques of solving algebraic and transcendental equations.
C210.4	Appreciate the numerical techniques of interpolation and differentiation and integration for engineering problems.
C210.5	Explain the various techniques and methods for solving differential equations.

Sl. No.:27

ME8492-Kinematics of Machinery	
CO No	***CO Statement***
C211.1	Illustrate the basic mechanisms, linkage, mobility, mechanical advantage and degrees of freedom
C211.2	Analyze the displacement, velocity and acceleration analysis of simple mechanisms by using the graphical method as well as instantaneous centre method.
C211.3	Discuss the motion resulting from a specified set of linkages, and cam mechanisms for specified output motions and develop a cam profile.
C211.4	Apply the basic concepts of gears and gear trains along with toothed gearing and kinematics of gear trains.
C211.5	Evaluate the effects of friction in motion transmission and in machine components.

Sl. No.:28

ME8451-Manufacturing Technology-II	
CO No	***CO Statement***
C212.1	Explain the mechanism of material removal processes.
C212.2	Discuss the construction and operational features of centre lathe and other special-purpose lathes.
C212.3	Describe the features of the shaper, planer, milling, drilling, sawing and broaching machines.
C212.4	Explain the various grinding and other superfinishing processes apart from gear manufacturing processes.
C212.5	Summarize numerical control of machine tools to develop the part program.

Sl. No.:29

ME8491-Engineering Metallurgy	
CO No	***CO Statement***
C213.1	Apply phase diagram, Iron-Iron carbon diagram, Gibb's phase rule and lever rule to identify or derive the property for a material.

C213.2	Discuss isothermal transformation diagram, continuous cooling diagrams and different heat treatment processes to identify or derive the property for a material.
C213.3	Explain the effect of alloying elements on ferrous and non-ferrous metals.
C213.4	Describe the properties and applications of non-metallic materials.
C213.5	Evaluate the mechanical properties of the material by various testing methods.

Sl. No.:30

CE8395-Strength of Materials for Mechanical Engineers	
CO No	***CO Statement***
C214.1	Explain the concepts of stress and strain, principal stresses and principal planes.
C214.2	Determine shear force and bending moment in beams.
C214.3	Apply torsion equation in circular and helical springs design.
C214.4	Calculate the deflection of beams and slope by different methods.
C214.5	Estimate the stress and strain associated with thin and thick cylinders.

Sl. No.:31

ME8493-Thermal Engineering-I	
CO No	***CO Statement***
C215.1	Apply thermodynamic concepts to different gas power cycles, steam power cycles for solving problems.
C215.2	Explain the working of different types of compressor and the performance of reciprocating compressor.
C215.3	Describe the working of IC engines, requirement and the difference between SI and CI engines.
C215.4	Discuss the performance characteristic of IC engines.
C215.5	Interpret the concept and working of gas turbine and their performance.

Sl. No.:32

ME8462-Manufacturing Technology Laboratory–II	
CO No	***CO Statement***
C216.1	Perform contour milling operations using vertical milling machine.
C216.2	Make gears using gear cutting machines.
C216.3	Perform finishing operation by using grinding machine.
C216.4	Calculate the cutting force in milling and turning machine.
C216.5	Develop CNC part programming.

Sl. No.:33

CE8381-Strength of Materials and Fluid Mechanics and Machinery Laboratory	
CO No	***CO Statement***
C217.1	Determine the tensile, torsion and hardness properties of metals by testing.
C217.2	Determine the stiffness properties of helical and carriage spring.
C217.3	Apply the conservation laws to determine the coefficient of discharge of a venturimeter and finding the friction factor of given pipe.
C217.4	Apply the fluid static and momentum principles to determine the metacentre height and forces due to impact of jet.
C217.5	Determine the performance characteristics of turbine, roto dynamic pump and positive displacement pump.

Sl. No.:34

HS8461-Advanced Reading and Writing	
CO No	***CO Statement***
C218.1	Read to evaluate the text intelligently and write a descriptive paragraph.
C218.2	Interpret the findings with appropriate technological / research citation.
C218.3	Write different types of essays, understand parts of speech and use appropriate connectives in writing a paragraph.
C218.4	Develop effective resumes and job application letters.
C218.5	Prepare letters of recommendation and perform critical thinking in various professional contexts.

Semester-V

Sl. No.:35

ME8595-Thermal Engineering- II	
CO No	***CO Statement***
C301.1	Solve problems in the steam nozzle.
C301.2	Explain the functioning and features of different types of boilers and their auxiliaries.
C301.3	Calculate the flow parameters, work done, efficiency and draw velocity diagrams in steam turbines.
C301.4	Summarize the concept of cogeneration, working features of heat pumps and heat exchangers.
C301.5	Evaluate the refrigeration and air – conditioning problems using a refrigerant table, charts and psychrometric charts.

Sl. No.:36

ME8593-Design of Machine Elements	
CO No	***CO Statement***
C302.1	Compute the stress acting on various machine elements.
C302.2	Compute the dimensions, stress requirements of shaft and couplings based on various load conditions.

C302.3	Summarize temporary and permanent joints based on application requirements.
C302.4	Compute the dimensions of the energy-storing devices for specific applications.
C302.5	Analyze different types of bearings for static and dynamic load.

Sl. No.:37

ME8501-Metrology and Measurements	
CO No	***CO Statement***
C303.1	Apply the concepts of various types of measurements used in different metrological instruments.
C303.2	Explain the principles of linear and angular measurement tools used for industrial applications.
C303.3	Analyze the different advanced measuring instruments using procedures especially for conducting computer-aided inspection.
C303.4	Choose the techniques used for form measurement in industrial applications and structures.
C303.5	Discuss the measuring techniques of mechanical properties measuring instruments in industrial applications.

Sl. No.:38

ME8594-Dynamics of Machines	
CO No	***CO Statement***
C304.1	Analyze static and dynamic forces of planar mechanisms in both graphical and analytical methods.
C304.2	Calculate the balancing of reciprocating and rotating masses, the unbalanced forces and couple in a system.
C304.3	Compute the damped and undamped free vibration of the systems.
C304.4	Determine the frequency of forced vibration, critical speed and torsional vibration of the shaft.
C304.5	Estimate the speed and lift of the governor and also the gyroscopic effect on automobiles, ships and airplanes.

Sl. No.:39

OAI551-Environment and Agriculture	
CO No	***CO Statement***
C318.1	Appreciate the role of environment in the current practice and concerns the sustainabilityof agriculture.
C318.2	Discuss the development, problems in irrigation systems.
C318.3	Describe the global warming, ecosystem changes and desertification.
C318.4	Explain ecological diversity and farming principles.
C318.5	Interpret the global environmental governance, agricultural environment policies and its impacts.

Sl. No.:40

ME8511-Kinematics and Dynamics Laboratory	
CO No	***CO Statement***
C305.1	Explain gear parameters and working of lab equipment's.
C305.2	Analyze the kinematics of mechanisms, gyroscopic effect and two-dimensional (planar) rigid-body motion.
C305.3	Determine mass moment of inertia of mechanical element, governor effort and range sensitivity and compare for different governors.
C305.4	Determine the natural frequency and damping coefficient, torsional frequency and critical speeds of shafts.
C305.5	Analyze balancing mass of rotating and reciprocating masses and transmissibility ration.

Sl. No.:41

ME8512-Thermal Engineering Laboratory	
CO No	***CO Statement***
C306.1	Conduct tests on heat conduction apparatus and evaluate thermal conductivity of Materials.
C306.2	Conduct tests on natural and forced convective heat transfer apparatus and evaluate heat transfer coefficient.
C306.3	Conduct tests on radiative heat transfer apparatus and evaluate Stefan Boltzmann constant and emissivity.
C306.4	Conduct tests to evaluate the performance of parallel/counter flow heat exchanger apparatus and reciprocating air compressor.
C306.5	Conduct tests to evaluate the performance of refrigeration and air conditioning test rigs.

Sl. No.:42

ME8513-Metrology and Measurements Laboratory	
CO No	***CO Statement***
C307.1	Measure the gear tooth dimensions, angle using sine bar, straightness and flatness, thread parameters, temperature using thermocouple, force, displacement, torque and vibration.
C307.2	Calibrate the vernier, micrometer and slip gauges and setting up the comparator for the inspection.
C307.3	Measure the components precisely using non-contact (optical) measurement system.
C307.4	Demonstrate the functions of Coordinate measuring machine and surface roughness tester for measuring complex profiles.
C307.5	Explain the machine tool metrology equipments with its measuring technique like straightness using auto collimator, precision level using spindle tests.

Semester-VI

Sl. No.:43

ME8651-Design of Transmission Systems	
CO No	***CO Statement***
C308.1	Apply the design parameters of flexible transmission elements like belts, chains and wire ropes for a given condition.
C308.1	Explain the spur and helical gear terminology considering the strength and wear.

C308.2	Compute the required parameters in designing worm, bevel and double-helical gear power transmission.
C308.3	Analyzing the speed ratio and gearbox parameters for the given application.
C308.4	Evaluate the parameters require to design cam, clutches and brakes for varied applications.

Sl. No.:44

ME8691-Computer Aided Design and Manufacturing	
CO No	***CO Statement***
C309.1	Explain the basic concept of product design and 2D / 3D CAD transformations.
C309.2	Discuss the representation of curves, surface solid modeling techniques for various real-time applications.
C309.3	Describe the different types of Standard systems used in CAD.
C309.4	Apply NC & CNC programming concepts to develop part programme for Lathe & Milling Machines.
C309.5	Discuss the different types of techniques used in Cellular Manufacturing and FMS.

Sl. No.:45

ME8693-Heat and Mass Transfer	
CO No	***CO Statement***
C310.1	Apply heat conduction equations to various surfaces under steady-state and transient condition problems.
C310.2	Solve free and forced convective heat transfer correlations to internal and external flows through/over various surface configurations.
C310.3	Explain the phenomena of boiling and condensation, LMTD and NTU methods of thermal analysis in heat exchanger problems.
C310.4	Describe basic laws for radiation and radioactive heat transfer between different types of surface problems.
C310.5	Choose diffusive and convective mass transfer equations for different applications.

Sl. No.:46

ME8692-Finite Element Analysis	
CO No	***CO Statement***
C311.1	Summarize the basics of finite element formulation.
C311.2	Apply finite element formulations to solve one-dimensional problem.
C311.3	Choose finite element formulations to solve two-dimensional scalar problems.
C311.4	Illustrate finite element method to solve two-dimensional vector problems.
C311.5	Explain the finite element method to solve problems on isoparametric element problems.

Sl. No.:47

ME8694-Hydraulics and Pneumatics	
CO No	***CO Statement***
C312.1	Explain the fluid power and its applications, selection of fluid and various types of fluid power pumps.
C312.2	Discuss the features, applications and functions of different types of hydraulic motors, actuators and flow control valves.
C312.3	Apply the hydraulic components to make the different types of hydraulic circuits and the applications of various hydraulic systems.
C312.4	Analyze the different pneumatic components, applications and design of pneumatic circuits and systems.
C312.5	Evaluate the hydraulic and pneumatic systems, various troubleshooting methods used for different applications and structures.

Sl. No.:48

ME8091- Automobile Engineering	
CO No	***CO Statement***
C316.1	Explain the fluid power and its applications, selection of fluid and various types of fluid power pumps.
C316.2	Discuss the features, applications and functions of different types of hydraulic motors, actuators and flow control valves.
C316.3	Apply the hydraulic components to make the different types of hydraulic circuits and the applications of various hydraulic systems.
C316.4	Analyze the different pneumatic components, applications and design of pneumatic circuits and systems.
C316.5	Evaluate the hydraulic and pneumatic systems, various troubleshooting methods used for different applications and structures.

Sl. No.:49

ME8681-CAD / CAM Laboratory	
CO No	***CO Statement***
C313.1	Design experience in handling 2D drafting and 3D modelling software systems.
C313.2	Design 3D geometric model of parts, sub-assemblies, assemblies.
C313.3	Develop the detail drawing of 3D geometric model.
C313.4	Demonstrate manual part programming and simulate the CNC program.
C313.5	Generate part programming using G and M code through CAM software.

Sl. No.:50

ME8682-Design and Fabrication Project	
CO No	***CO Statement***
C314.1	Establish formulation, analysis and solve complex problems.

C314.2	Apply effectively with written, oral and visual means in a technical setting.
C314.3	Compare modern design and analysis tools.
C314.4	Construct system components related to engineering problems giving considerations to the environment and society.
C314.5	Support to serve as an effective team member to plan and complete the project.

Sl. No.:51

HS8581-Professional Communication	
CO No	***CO Statement***
C315.1	Employ required soft skills to successfully execute the job on hand.
C315.2	Classify the content material and make effective presentations.
C315.3	Correlate favorably to the values of others opinion and manage difficult situations in group discussions wisely.
C315.4	Express intelligently during job interviews and be successful.
C315.5	Manage tasks as an individual or team member to manage the task in time.

Semester-VII

Sl. No.:52

ME8792-Power Plant Engineering	
CO No	***CO Statement***
C401.1	Explain the various subsystems of the coal power plant.
C401.2	Calculate the efficiency of gas power cycles.
C401.3	Describe the layout, construction and working of the components inside the different types of nuclear power plants.
C401.4	Discuss the working principle of various renewable energy power plants.
C401.5	Analyze the economy of power generation and the environmental hazards.

Sl. No.:53

ME8793-Process Planning and Cost Estimation	
CO No	***CO Statement***
C402.1	Choose the process, equipment and tools for various products.
C402.2	Prepare process planning activity chart based on various process parameters.
C402.3	Describe the concept of cost estimation and its procedure.
C402.4	Estimate the cost for a job in a forging shop, welding shop andfoundry shop.
C402.5	Calculate the time for machining in various machining operations.

Sl. No.:54

ME8791-Mechatronics	
CO No	***CO Statement***
C403.1	Explain the various types of sensors used in mechatronics systems and their applications.
C403.2	Discuss the architecture of microprocessor and microcontroller, pin diagram, addressing modes of microprocessor and microcontroller.
C403.3	Describe the architecture of 8255 PPI, and various device interfacing.
C403.4	Explain the architecture, programming and application of programmable logic controllers.
C403.5	Apply the knowledge acquired from various case studies in the mechatronics system.

Sl. No.:55

ME8711-Simulation and Analysis Laboratory	
CO No	***CO Statement***
C404.1	Determine the effect of force and impact of stress on the mechanical components.
C404.2	Calculate the deflection occurring on the mechanical components.
C404.3	Understanding of the thermal stress creation and its mechanism of spreading in mechanical components.
C404.4	Gain knowledge regarding the mechanism of heat transfer in mechanical components.
C404.5	Determine the vibration effects on mechanical components.

Sl. No.:56

ME8781-Mechatronics Laboratory	
CO No	***CO Statement***
C405.1	Understand the working of various pneumatic systems by practice.
C405.2	Create various microprocessor or programs for steeper motors and allied equipment's.
C405.3	Analyse the different hydraulic circuits through hydraulic trainer kit.
C405.4	Demonstration of image processing technique kit.
C405.5	Simulation of circuits with multiple cylinder sequences in electro pneumatic using PLC.

Sl. No.:57

ME8712-Technical Seminar	
CO No	***CO Statement***
C406.1	Improve their communication skill.
C406.2	Improve their presentation skill.
C406.3	Review the latest and recent trends and technologies.
C406.4	Effectively write technical report.
C406.5	Successfully face the technical committee.

Sl. No.:58

OML751-Testing of Materials	
CO No	***CO Statement***
C407.1	Classify material testing, purpose and their standards.
C407.2	Discuss mechanical testing to find properties of the various materials.
C407.3	Justify the selection of non-destructive testing for different materials.
C407.4	Explain material characterization testing with advantages and limitations.
C407.5	Describe thermal testing, dynamic mechanical analysis and chemical testing.

Sl. No.:59

ME8073-Unconventional Machining Processes	
CO No	***CO Statement***
C408.1	Explain the need for unconventional machining processes and their classification.
C408.2	Compare different thermal energy and electrical energy based unconventional machining processes.
C408.3	Summarize various chemical and electrochemical energy based unconventional machining processes.
C408.4	Explain various nano abrasives based unconventional machining processes.
C408.5	Distinguish various recent trends based unconventional machining processes.

Sl. No.:60

ME8097-Non-Destructive Testing and Evaluation	
CO No	***CO Statement***
C409.1	Differentiate NDT methods with destructive testing.
C409.2	Apply the knowledge of various surface NDE methods to the testing of materials.
C409.3	Explain thermography and eddy current testing methods on testing of materials.
C409.4	Describe ultrasonic and acoustic emission testing methods on testing of materials.
C409.5	Discuss the radiography method of testing of materials.

Semester-VIII

Sl. No.:61

MG8591-Principles of Management	
CO No	***CO Statement***
C410.1	Explain management, organization and its principles.
C410.2	Discuss the planning process, tools, techniques and also decision-making steps.
C410.3	Describe organisation structure, chart, delegation of authority and HR planning process.
C410.4	Develop constructive mind in making and designing management by proper direction through alternative plans and solutions by the study of management functions like planning, organising, directing and controlling.

MG8591-Principles of Management	
CO No	***CO Statement***
C410.5	Illustrate a clear picture of understanding of managerial functions like planning, organizing, staffing, leading & controlling to make good management and organisation.

Sl. No.:62

IE8693-Production Planning and Control	
CO No	***CO Statement***
C412.1	Discuss the production planning processes to convert the raw material into a finished product.
C412.2	Prepare production planning activities chart for work-study to reduce the production time.
C412.3	Appraise the product planning and process planning used for improving the market sale of an existing product.
C412.4	Develop the production schedule for the given set of products.
C412.5	Explain inventory control activities to reduce inventory costs.

Sl. No.:63

ME8811-Project Work	
CO No	***CO Statement***
C411.1	Analyze a specific problem, engineering needs and identifying the ways and means to provide solution through literature review.
C411.2	Choose an appropriate methodology, tools and techniques to complete the project in the easiest way.
C411.3	Validate and compare the project outcome with expected results.
C411.4	Prepare manuscripts for scientific records.
C411.5	Administer the project for time schedule and financial plans.

15. COURSE OUTCOME ARTICULATION MATRIX

Course Articulation Matrix shows the educational relationship (Level of Learning achieved) between Course Outcomes and Program Outcomes for a Course. This matrix strongly indicates whether the students are able to achieve the course learning objectives. The matrix can be used for any course and is a good way to evaluate a course syllabus. The mapping of Course Outcome and Program Outcome is established in matrix form having 3 (strong), 2 (moderate) and 1 (weak) correlation as shown in Table 7 and Table 8.

Table 7. Course Outcomes Articulation Matrix of R17 Regulation Courses (Batch 2017-2023)

Semester-I

Sl. No.:1

Course Name: Communicative English

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
HS8151 / C101.1	1	1	1	1	1	3	3	3	1	3	0	3	0	0	0
HS8151 / C101.2	1	1	1	1	1	3	3	3	1	3	0	3	0	0	0
HS8151 / C101.3	2	3	2	3	2	3	3	3	2	3	3	3	0	0	0
HS8151 / C101.4	2	3	2	3	2	3	3	3	2	3	3	3	0	0	0
HS8151 / C101.5	2	3	3	3	0	3	3	3	2	3	0	3	0	0	0
Average	2	3	3	3	2	3	3	3	2	3	2	3	0	0	0

Sl. No.:2

Course Name: Engineering Mathematics - I

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
MA8151 / C102.1	3	3	1	1	0	0	0	0	2	0	2	3	0	1	0
MA8151 / C102.2	3	3	1	1	0	0	0	0	2	0	2	3	0	1	0
MA8151 / C102.3	3	3	1	1	0	0	0	0	2	0	2	3	0	1	0
MA8151 / C102.4	3	3	1	1	0	0	0	0	2	0	2	3	0	1	0
MA8151 / C102.5	3	3	1	1	0	0	0	0	2	0	2	3	0	1	0
Average	3	3	2	2	0	0	0	0	3	0	3	3	0	2	0

Sl. No.:3

Course Name: Engineering Physics

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
PH8151 / C103.1	3	3	2	1	1	1	0	0	0	0	0	0	0	1	0
PH8151 / C103.2	3	3	2	1	2	1	0	0	0	0	0	0	0	0	0
PH8151 / C103.3	3	3	2	2	2	1	0	0	0	0	0	1	0	2	0
PH8151 / C103.4	3	3	1	1	2	1	0	0	0	0	0	0	0	0	0
PH8151 / C103.5	3	3	1	1	2	1	0	0	0	0	0	0	0	1	0
Average	3	3	2	2	3	2	0	0	0	0	0	1	0	1	0

Sl. No.:4

Course Name: Engineering Chemistry

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CY8151 / C104.1	3	2	2	1	0	1	1	0	0	0	0	1	0	1	0
CY8151 / C104.2	2	0	0	1	0	2	2	0	0	0	0	0	0	1	0
CY8151 / C104.3	3	1	0	0	0	0	0	0	0	0	0	0	0	1	0
CY8151 / C104.4	3	1	1	0	0	1	2	0	0	0	0	0	0	1	0
CY8151 / C104.5	3	1	2	1	0	2	2	0	0	0	0	2	0	1	0
Average	3	2	2	1	0	2	2	0	0	0	0	1	0	2	0

Sl. No.:5

Course Name: Problem Solving and Python Programming

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
GE8151 / C105.1	3	3	3	3	2	0	0	0	0	0	2	2	0	1	2
GE8151 / C105.2	3	3	3	3	2	0	0	0	0	0	2	2	0	1	2
GE8151 / C105.3	3	3	3	3	2	0	0	0	0	0	2	0	0	1	2
GE8151 / C105.4	2	2	0	2	2	0	0	0	0	0	1	0	0	1	2
GE8151 / C105.5	1	2	0	0	1	0	0	0	0	0	1	0	0	1	2
Average	3	3	3	3	3	0	0	0	0	0	2	1	0	2	3

Sl. No.:6

Course Name: Engineering Graphics

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
GE8152 / C106.1	3	1	2	0	2	0	0	0	0	3	0	2	3	0	1
GE8152 / C106.2	3	1	2	0	2	0	0	0	0	3	0	2	3	0	1
GE8152 / C106.3	3	1	2	0	2	0	0	0	0	3	0	2	3	0	1
GE8152 / C106.4	3	1	2	0	2	0	0	0	0	3	0	2	3	0	1
GE8152 / C106.5	3	1	2	0	2	0	0	0	0	3	0	2	3	0	1
Average	3	1	2	0	2	0	0	0	0	3	0	2	3	0	1

Sl. No.:7

Course Name: Problem Solving and Python Programming Laboratory

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
GE8161 / C107.1	3	3	3	3	3	0	0	0	0	0	3	2	0	1	2
GE8161 / C107.2	3	3	3	3	3	0	0	0	0	0	3	2	0	1	2
GE8161 / C107.3	3	3	3	3	2	0	0	0	0	0	2	0	0	1	2

GE8161 / C107.4	3	2	0	2	2	0	0	0	0	0	1	0	0	1	2
GE8161 / C107.5	1	2	0	0	1	0	0	0	0	0	1	0	0	1	2
Average	3	3	3	3	3	0	0	0	0	0	3	1	0	2	3

Sl. No.:8

Course Name: Physics and Chemistry Laboratory

Course Code / CO No	***Program Outcome***												***PSO***		
	1	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***1***	***2***	***3***
BS8161 / C108.1	3	2	3	1	1	0	0	0	0	0	0	0	0	2	0
BS8161 / C108.2	3	3	2	1	1	0	0	0	0	0	0	0	0	0	0
BS8161 / C108.3	3	2	3	1	1	0	0	0	0	0	0	0	0	0	0
BS8161 / C108.4	3	3	2	1	1	0	0	0	0	0	0	0	0	2	0
BS8161 / C108.5	3	2	3	1	1	0	0	0	0	0	0	0	0	0	0
Average	3	3	3	2	2	0	0	0	0	0	0	0	0	1	0

Semester-II

Sl. No.:9

Course Name: Technical English

Course Code / CO No	***Program Outcome***												***PSO***		
	1	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***1***	***2***	***3***
HS8251 / C109.1	3	3	3	3	3	3	3	3	2	3	3	3	0	0	0
HS8251 / C109.2	3	3	3	3	3	3	3	3	2	3	3	3	0	0	0
HS8251 / C109.3	3	3	3	3	3	3	3	3	2	3	3	3	0	0	0
HS8251 / C109.4	3	3	3	3	2	3	3	3	2	3	3	3	0	0	0
HS8251 / C109.5	0	0	0	0	0	0	0	0	3	3	3	3	0	0	0
Average	3	3	3	3	3	3	3	3	3	3	3	3	0	0	0

Sl. No.:10

Course Name: Engineering Mathematics – II

Course Code / CO No	***Program Outcome***												***PSO***		
	1	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***1***	***2***	***3***
MA8251 / C110.1	3	3	1	1	1	0	0	0	2	0	2	3	0	1	0
MA8251 / C110.2	3	3	1	1	1	0	0	0	2	0	2	3	0	1	0
MA8251 / C110.3	3	3	1	1	1	0	0	0	2	0	2	3	0	1	0
MA8251 / C110.4	3	3	1	1	1	0	0	0	2	0	2	3	0	1	0
MA8251 / C110.5	3	3	1	1	1	0	0	0	2	0	2	3	0	1	0
Average	3	3	2	2	2	0	0	0	3	0	3	3	0	2	0

Sl. No.:11

Course Name: Materials Science

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
PH8251 / C111.1	3	2	1	2	1	1	0	0	0	0	0	0	0	1	0
PH8251 / C111.2	3	2	1	1	2	1	1	0	0	0	0	0	0	1	0
PH8251 / C111.3	3	2	2	2	2	1	0	0	0	0	0	0	0	1	0
PH8251 / C111.4	3	2	2	1	2	2	0	0	0	0	0	1	0	1	0
PH8251 / C111.5	3	2	2	1	2	1	0	0	0	0	0	0	0	1	0
Average	3	3	2	2	3	2	1	0	0	0	0	1	0	2	0

Sl. No.:12

Course Name: Basic Electrical, Electronics and Instrumentation Engineering

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
BE8253 / C112.1	2	2	1	0	0	0	0	1	0	0	0	2	2	1	0
BE8253 / C112.2	2	2	1	0	0	0	0	1	0	0	0	2	2	1	0
BE8253 / C112.3	2	1	1	0	0	0	0	1	0	0	0	2	2	1	0
BE8253 / C112.4	2	2	1	0	0	0	0	1	0	0	0	2	2	1	0
BE8253 / C112.5	2	2	1	0	0	0	0	1	0	0	0	2	2	1	0
Average	3	3	2	0	0	0	0	2	0	0	0	3	3	2	0

Sl. No.:13

Course Name: Environmental Science and Engineering

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
GE8291 / C113.1	2	1	0	0	0	2	3	0	0	0	0	2	0	0	0
GE8291 / C113.2	3	2	0	0	0	3	3	0	0	0	0	2	0	0	0
GE8291 / C113.3	3	0	1	0	0	2	2	0	0	0	0	2	0	0	0
GE8291 / C113.4	3	2	1	1	0	2	2	0	0	0	0	2	0	0	0
GE8291 / C113.5	3	2	1	0	0	2	2	0	0	0	0	1	0	0	0
Average	3	2	1	1	0	3	3	0	0	0	0	3	0	0	0

Sl. No.:14

Course Name: Engineering Mechanics

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
GE8292 / C114.1	3	2	2	1	2	0	0	0	0	0	0	2	3	1	2
GE8292 / C114.2	3	2	2	1	2	0	0	0	0	0	0	2	3	1	2
GE8292 / C114.3	3	2	3	1	2	0	0	0	0	0	0	2	3	1	2
GE8292 / C114.4	3	2	3	1	2	0	0	0	0	0	0	2	3	1	2
GE8292 / C114.5	3	2	3	1	2	0	0	0	0	0	0	2	3	1	2
Average	3	3	3	2	3	0	0	0	0	0	0	3	3	2	3

Sl. No.:15

Course Name: Engineering Practices Laboratory

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
GE8261 / C115.1	3	2	0	0	1	1	1	0	0	0	0	2	2	1	1
GE8261 / C115.2	3	2	0	0	1	1	1	0	0	0	0	2	2	1	1
GE8261 / C115.3	3	2	0	0	1	1	1	0	0	0	0	2	2	1	1
GE8261 / C115.4	3	2	0	0	1	1	1	0	0	0	0	2	2	1	1
GE8261 / C115.5	3	2	0	0	1	1	1	0	0	0	0	2	2	1	1
Average	3	3	0	0	2	2	2	0	0	0	0	3	3	2	2

Sl. No.:16

Course Name: Basic Electrical, Electronics and Instrumentation Engineering Laboratory

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
BE8261 / C116.1	3	3	2	1	1	0	0	2	2	0	0	0	2	1	1
BE8261 / C116.2	3	3	2	1	1	0	0	2	2	0	0	0	2	1	1
BE8261 / C116.3	3	3	2	1	1	0	0	2	2	0	0	0	2	1	1
BE8261 / C116.4	3	3	2	1	1	0	0	2	2	0	0	0	2	1	1
BE8261 / C116.5	3	3	2	1	1	0	0	2	2	0	0	0	2	1	1
Average	3	3	3	2	2	0	0	3	3	0	0	0	3	2	2

Semester-III

Sl. No.:17

Course Name: Transforms and Partial Differential Equations

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
MA6351 / C201.1	3	3	1	1	0	0	0	0	2	0	0	3	0	1	1
MA6351 / C201.2	3	3	1	1	0	0	0	0	2	0	0	3	0	1	1
MA6351 / C201.3	3	3	1	1	0	0	0	0	2	0	0	3	0	1	1
MA6351 / C201.4	3	3	1	1	0	0	0	0	2	0	0	3	0	1	1
MA6351 / C201.5	3	3	1	1	0	0	0	0	2	0	0	3	0	1	1
Average	3	3	2	2	0	0	0	0	3	0	0	3	0	2	2

Sl. No.:18

Course Name: Engineering Thermodynamics

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
ME8391 / C202.1	3	3	2	1	0	0	0	0	0	0	0	2	3	2	1
ME8391 / C202.2	3	3	2	1	0	0	0	0	0	0	0	2	3	2	1
ME8391 / C202.3	3	3	2	1	0	0	0	0	1	0	1	2	3	2	1
ME8391 / C202.4	3	3	2	1	0	1	0	0	2	0	1	2	3	2	1
ME8391 / C202.5	3	3	2	1	0	1	0	0	2	0	1	2	3	2	1
Average	3	3	3	2	0	1	0	0	2	0	1	3	3	3	2

Sl. No.:19

Course Name: Fluid Mechanics and Machinery

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CE8394 / C203.1	3	3	1	2	0	0	0	0	0	0	0	2	3	2	3
CE8394 / C203.2	3	3	2	2	0	0	0	0	0	0	0	2	3	2	3
CE8394 / C203.3	3	3	1	2	0	0	0	0	0	0	0	2	3	3	3
CE8394 / C203.4	3	3	2	3	0	0	0	0	0	0	0	3	3	2	2
CE8394 / C203.5	3	3	2	3	0	0	0	0	0	0	0	3	3	2	2
Average	3	3	2	2	0	0	0	0	0	0	0	2	3	2	3

Sl. No.:20

Course Name: Manufacturing Technology – I

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
ME8351 / C204.1	3	0	2	0	0	2	3	1	1	0	0	1	1	2	0
ME8351 / C204.2	3	0	2	0	0	2	3	1	1	0	0	1	1	2	0
ME8351 / C204.3	3	0	2	0	0	2	2	1	1	0	0	1	1	2	0

ME8351 / C204.4	3	0	2	0	0	2	2	1	1	0	0	1	1	2	0
ME8351 / C204.5	3	0	2	0	0	2	2	1	1	0	0	1	1	2	0
Average	3	0	3	0	0	3	3	2	2	0	0	2	2	3	0

Sl. No.:21

Course Name: Electrical Drives and Controls

Course Code / CO No	***Program Outcome***												***PSO***		
	1	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***1***	***2***	***3***
EE8353 / C205.1	2	1	1	0	0	0	0	0	1	0	0	1	2	1	1
EE8353 / C205.2	2	1	1	0	0	0	0	0	1	0	0	1	2	1	1
EE8353 / C205.3	2	1	1	0	0	0	0	0	1	0	0	1	2	1	1
EE8353 / C205.4	2	1	1	0	0	0	0	0	1	0	0	1	2	1	1
EE8353 / C205.5	2	1	1	0	0	0	0	0	1	0	0	1	2	1	1
Average	3	2	2	0	0	0	0	0	2	0	0	2	3	2	2

Sl. No.:22

Course Name: Manufacturing Technology Laboratory – I

Course Code / CO No	***Program Outcome***												***PSO***		
	1	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***1***	***2***	***3***
ME8361 / C206.1	3	0	0	0	0	0	1	0	2	0	0	1	1	2	0
ME8361 / C206.2	3	0	0	0	0	0	1	0	2	0	0	1	1	2	0
ME8361 / C206.3	3	0	0	0	0	0	1	0	2	0	0	1	1	2	0
ME8361 / C206.4	3	0	0	0	0	0	1	0	2	0	0	1	1	2	0
ME8361 / C206.5	3	0	0	0	0	0	1	0	2	0	0	1	1	2	0
Average	3	0	0	0	0	0	2	0	3	0	0	2	2	3	0

Sl. No.:23

Course Name: Computer Aided Machine Drawing

Course Code / CO No	***Program Outcome***												***PSO***		
	1	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***1***	***2***	***3***
ME8381 / C207.1	1	2	0	0	3	0	0	0	3	2	0	3	2	2	2
ME8381 / C207.2	1	2	0	0	3	0	0	0	3	2	0	3	2	2	2
ME8381 / C207.3	1	2	0	0	3	0	0	0	3	2	0	3	2	2	2
ME8381 / C207.4	1	2	0	0	3	0	0	0	3	2	0	3	2	2	2
ME8381 / C207.5	1	2	0	0	3	0	0	0	3	2	0	3	2	2	2
Average	2	3	0	0	3	0	0	0	3	3	0	3	3	3	3

Sl. No.:24

Course Name: Electrical Engineering Laboratory

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
EE8361 / C208.1	3	1	3	0	0	1	0	0	0	0	0	2	1	1	1
EE8361 / C208.2	3	1	3	0	0	1	0	0	0	0	0	2	1	1	1
EE8361 / C208.3	3	1	3	0	0	1	0	0	0	0	0	2	1	1	1
EE8361 / C208.4	3	1	3	0	0	1	0	0	0	0	0	2	1	1	1
EE8361 / C208.5	3	1	3	0	0	1	0	0	0	0	0	2	1	1	1
Average	3	2	3	0	0	2	0	0	0	0	0	3	2	2	2

Sl. No.:25

Course Name: Interpersonal Skills / Listening & Speaking

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
HS8381 / C209.1	0	1	3	2	0	2	2	3	2	3	2	2	0	0	0
HS8381 / C209.2	0	1	3	2	0	2	2	3	2	3	2	2	0	0	0
HS8381 / C209.3	0	1	3	2	0	2	2	3	2	3	2	2	0	0	0
HS8381 / C209.4	0	1	3	2	0	2	2	3	2	3	2	2	0	0	0
HS8381 / C209.5	0	1	3	2	0	2	2	3	2	3	2	2	0	0	0
Average	0	2	3	3	0	3	3	3	3	3	3	3	0	0	0

Semester-IV

Sl. No.:26

Course Name: Statistics and Numerical Methods

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
MA8452 / C210.1	3	3	1	1	0	0	0	0	2	0	0	3	0	1	3
MA8452 / C210.2	3	3	1	1	0	0	0	0	2	0	0	3	0	1	3
MA8452 / C210.3	3	3	1	1	0	0	0	0	2	0	0	3	0	1	2
MA8452 / C210.4	3	3	1	1	0	0	0	0	2	0	0	3	0	1	2
MA8452 / C210.5	3	3	1	1	0	0	0	0	2	0	0	3	0	1	1
Average	3	3	2	2	0	0	0	0	3	0	0	3	0	2	3

Sl. No.:27

Course Name: Kinematics of Machinery

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
ME8492 / C211.1	3	2	2	0	0	0	0	0	0	0	0	2	3	1	1
ME8492 / C211.2	3	2	2	0	0	0	0	0	0	0	0	2	3	1	1
ME8492 / C211.3	3	2	2	0	0	0	0	0	0	0	0	2	3	1	1
ME8492 / C211.4	3	2	2	0	0	0	0	0	0	0	0	2	3	1	1
ME8492 / C211.5	3	2	2	0	0	0	0	0	0	0	0	2	3	1	1
Average	3	3	3	0	0	0	0	0	0	0	0	3	3	2	2

Sl. No.:28

Course Name: Manufacturing Technology-II

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
ME8451 / C212.1	3	3	3	1	1	0	0	0	0	0	0	2	2	2	1
ME8451 / C212.2	3	3	3	1	1	0	0	0	0	0	0	2	2	2	1
ME8451 / C212.3	3	3	3	1	1	0	0	0	0	0	0	2	2	2	1
ME8451 / C212.4	3	3	2	1	1	0	0	0	0	0	0	2	2	2	1
ME8451 / C212.5	3	3	3	1	1	0	0	0	0	0	0	2	2	2	1
Average	3	3	3	2	2	0	0	0	0	0	0	3	3	3	2

Sl. No.:29

Course Name: Engineering Metallurgy

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
ME8491 / C213.1	3	1	3	2	0	0	0	0	0	0	0	2	2	1	1
ME8491 / C213.2	3	1	3	1	0	2	0	1	0	0	0	2	2	1	1
ME8491 / C213.3	3	1	3	0	0	0	0	0	0	0	0	2	2	1	1
ME8491 / C213.4	3	1	3	0	0	0	2	0	0	0	0	2	2	1	1
ME8491 / C213.5	3	1	3	2	2	0	0	0	0	0	0	2	2	1	1
Average	3	2	3	2	1	1	1	1	0	0	0	3	3	2	2

Sl. No.:30

Course Name: Strength of Materials for Mechanical Engineers

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CE8395 / C214.1	3	1	3	3	0	0	0	0	0	0	0	3	2	2	1
CE8395 / C214.2	3	3	3	3	0	0	0	0	0	0	0	3	2	2	1
CE8395 / C214.3	3	3	3	3	0	0	0	0	0	0	0	3	2	2	1

CE8395 / C214.4	3	3	3	3	0	0	0	0	0	0	0	3	2	2	1
CE8395 / C214.5	3	3	3	3	0	0	0	0	0	0	0	3	2	2	1
Average	3	3	3	3	0	0	0	0	0	0	0	3	3	3	2

Sl. No.:31

Course Name: Thermal Engineering-I

Course Code / CO No	***Program Outcome***												***PSO***		
	1	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***1***	***2***	***3***
ME8493 / C215.1	3	2	1	1	0	0	0	0	0	0	0	1	2	1	1
ME8493 / C215.2	3	2	2	1	0	0	0	0	0	0	0	1	2	1	1
ME8493 / C215.3	3	2	2	1	0	0	0	0	0	0	0	1	2	1	1
ME8493 / C215.4	3	2	1	1	0	0	0	0	0	0	0	1	2	1	1
ME8493 / C215.5	3	2	1	1	0	0	0	0	0	0	0	1	2	1	1
Average	3	3	2	2	0	0	0	0	0	0	0	2	3	2	2

Sl. No.:32

Course Name: Manufacturing Technology Laboratory–II

Course Code / CO No	***Program Outcome***												***PSO***		
	1	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***1***	***2***	***3***
ME8462 / C216.1	3	0	0	0	2	0	1	0	2	0	0	1	1	2	2
ME8462 / C216.2	3	0	0	0	2	0	1	0	2	0	0	1	1	2	2
ME8462 / C216.3	3	0	0	0	2	0	1	0	2	0	0	1	1	2	2
ME8462 / C216.4	3	0	0	0	2	0	1	0	2	0	0	1	1	2	2
ME8462 / C216.5	3	0	0	0	2	0	1	0	2	0	0	1	1	2	2
Average	3	0	0	0	3	0	2	0	3	0	0	2	2	3	3

Sl. No.:33

Course Name: Strength of Materials and Fluid Mechanics and Machinery Laboratory

Course Code / CO No	***Program Outcome***												***PSO***		
	1	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***1***	***2***	***3***
CE8381 / C217.1	3	2	1	0	0	0	0	0	0	0	0	3	3	3	2
CE8381 / C217.2	3	2	1	0	0	0	0	0	0	0	0	3	3	3	2
CE8381 / C217.3	3	2	1	0	0	0	0	0	0	0	0	3	3	3	2
CE8381 / C217.4	3	2	1	0	0	0	0	0	0	0	0	3	3	3	2
CE8381 / C217.5	3	2	1	0	0	0	0	0	0	0	0	3	3	3	2
Average	3	3	2	0	0	0	0	0	0	0	0	3	3	3	3

Sl. No.:34

Course Name: Advanced Reading and Writing

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
HS8461 / C218.1	0	0	0	0	0	1	1	3	3	3	2	3	0	1	0
HS8461 / C218.2	0	0	0	0	0	1	1	3	3	3	2	3	0	1	0
HS8461 / C218.3	0	0	0	0	0	1	1	3	3	3	2	3	0	1	0
HS8461 / C218.4	0	0	0	0	0	1	1	3	3	3	2	3	0	1	0
HS8461 / C218.5	0	0	0	0	0	1	1	3	3	3	2	3	0	1	0
Average	0	0	0	0	0	2	2	3	3	3	3	3	0	2	0

Semester-V

Sl. No.:35

Course Name: Thermal Engineering- II

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
ME8595 / C301.1	3	3	3	2	0	0	0	0	1	0	0	1	3	2	1
ME8595 / C301.2	3	3	3	2	0	0	0	0	1	0	0	1	3	2	1
ME8595 / C301.3	3	3	3	2	0	0	0	0	1	0	0	1	3	2	1
ME8595 / C301.4	3	3	3	2	0	0	0	0	1	0	0	1	3	2	1
ME8595 / C301.5	3	3	3	2	0	0	0	0	1	0	0	1	3	2	1
Average	3	3	3	3	0	0	0	0	2	0	0	2	3	3	2

Sl. No.:36

Course Name: Design of Machine Elements

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
ME8593 / C302.1	2	2	3	0	0	0	0	1	1	0	0	2	3	2	2
ME8593 / C302.2	2	2	3	0	0	0	0	1	1	0	0	2	3	2	2
ME8593 / C302.3	2	2	3	0	0	0	0	1	1	0	0	2	3	2	2
ME8593 / C302.4	2	2	3	0	0	0	0	1	1	0	0	2	3	2	2
ME8593 / C302.5	2	2	3	0	0	0	0	1	1	0	0	2	3	2	2
Average	3	3	3	0	0	0	0	2	2	0	0	3	3	3	3

Sl. No.:37

Course Name: Metrology and Measurements

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
ME8501 / C303.1	3	2	2	2	0	0	0	0	1	0	0	1	3	2	1
ME8501 / C303.2	3	2	2	2	0	0	0	0	1	0	0	1	3	2	1
ME8501 / C303.3	3	2	2	2	0	0	0	0	1	0	0	1	3	2	1
ME8501 / C303.4	3	2	2	2	0	0	0	0	1	0	0	1	3	2	1
ME8501 / C303.5	3	2	2	2	0	0	0	0	1	0	0	1	3	2	1
Average	3	3	3	3	0	0	0	0	2	0	0	2	3	3	2

Sl. No.:38

Course Name: Dynamics of Machines

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
ME8594 / C304.1	3	2	2	0	2	0	0	1	0	0	0	1	3	1	1
ME8594 / C304.2	3	2	2	0	2	0	0	1	0	0	0	1	3	1	1
ME8594 / C304.3	3	2	2	0	2	0	0	1	0	0	0	1	3	1	1
ME8594 / C304.4	3	2	2	0	2	0	0	1	0	0	0	1	3	1	1
ME8594 / C304.5	3	2	2	0	2	0	0	1	0	0	0	1	3	1	1
Average	3	3	3	0	3	0	0	2	0	0	0	2	3	2	2

Sl. No.:39

Course Name: Environment and Agriculture

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
OAI551 / C308.1	1	2	2	0	0	2	3	1	0	0	1	2	1	2	0
OAI551 / C308.2	1	2	2	0	0	2	3	1	0	0	2	2	1	2	0
OAI551 / C308.3	1	2	2	0	0	2	3	1	0	0	1	2	1	2	0
OAI551 / C308.4	1	2	2	0	0	2	3	1	0	0	1	2	1	2	0
OAI551 / C308.5	1	2	2	0	0	2	3	1	0	0	1	2	1	2	0
Average	2	3	3	0	0	3	3	2	0	0	2	3	2	3	0

Sl. No.:40

Course Name: Kinematics and Dynamics Laboratory

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
ME8511 / C305.1	3	1	1	1	1	0	0	0	0	0	1	1	2	2	1
ME8511 / C305.2	3	2	1	2	1	0	0	0	0	0	1	1	2	2	1
ME8511 / C305.3	3	2	1	2	1	0	0	0	0	0	1	1	2	2	1

ME8511 / C305.4	3	2	1	2	1	0	0	0	0	0	1	1	2	2	1
ME8511 / C305.5	3	2	1	2	1	0	0	0	0	0	1	1	2	2	1
Average	3	3	2	3	2	0	0	0	0	0	2	2	3	3	2

Sl. No.:41

Course Name: Thermal Engineering Laboratory

Course Code / CO No	***Program Outcome***												***PSO***		
	1	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***1***	***2***	***3***
ME8512 / C306.1	2	2	1	1	0	0	0	0	1	0	0	1	2	1	1
ME8512 / C306.2	2	2	1	1	0	0	0	0	1	0	0	1	2	1	1
ME8512 / C306.3	2	2	1	1	0	0	0	0	1	0	0	1	2	1	1
ME8512 / C306.4	2	2	1	1	0	0	0	0	1	0	0	1	2	1	1
ME8512 / C306.5	2	2	1	1	0	0	0	0	1	0	0	1	2	1	1
Average	3	3	2	2	0	0	0	0	2	0	0	2	3	2	2

Sl. No.:42

Course Name: Metrology and Measurements Laboratory

Course Code / CO No	***Program Outcome***												***PSO***		
	1	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***1***	***2***	***3***
ME8513 / C307.1	0	2	2	3	0	2	2	0	1	2	2	0	3	2	2
ME8513 / C307.2	0	2	2	3	0	2	2	0	1	2	2	0	2	2	2
ME8513 / C307.3	0	2	2	3	0	2	2	0	1	2	2	0	3	2	2
ME8513 / C307.4	0	2	2	3	0	2	2	0	1	2	2	0	3	2	2
ME8513 / C307.5	0	2	2	3	0	2	2	0	1	2	2	0	3	2	2
Average	0	3	3	3	0	3	3	0	2	3	3	0	3	3	3

Semester-VI

Sl. No.:43

Course Name: Design of Transmission Systems

Course Code / CO No	***Program Outcome***												***PSO***		
	1	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***1***	***2***	***3***
ME8651 / C310.1	3	2	3	1	0	0	0	0	1	0	0	1	2	3	2
ME8651 / C310.2	3	2	3	1	0	0	0	0	1	0	0	1	2	3	2
ME8651 / C310.3	3	2	3	1	0	0	0	0	1	0	0	1	2	3	2
ME8651 / C310.4	3	2	3	1	0	0	0	0	1	0	0	1	2	3	2
ME8651 / C310.5	3	2	3	1	0	0	0	0	1	0	0	1	2	3	2
Average	3	3	3	2	0	0	0	0	2	0	0	2	3	3	3

Sl. No.:44

Course Name: Computer Aided Design and Manufacturing

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
ME8691 / C311.1	3	3	2	2	2	0	1	0	1	0	0	1	3	2	2
ME8691 / C311.2	3	3	2	2	2	0	1	0	1	0	0	1	3	2	2
ME8691 / C311.3	3	3	2	2	2	0	1	0	1	0	0	1	3	2	2
ME8691 / C311.4	3	3	2	2	2	0	1	0	1	0	0	1	3	2	2
ME8691 / C311.5	3	3	2	2	2	0	1	0	1	0	0	1	3	2	2
Average	3	3	3	3	3	0	2	0	2	0	0	2	3	3	3

Sl. No.:45

Course Name: Heat and Mass Transfer

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
ME8693 / C312.1	3	3	3	2	0	0	0	0	0	0	0	2	3	2	1
ME8693 / C312.2	3	3	3	2	0	0	0	0	0	0	0	2	3	2	1
ME8693 / C312.3	3	3	3	2	0	0	0	0	0	0	0	2	3	2	1
ME8693 / C312.4	3	3	3	2	0	0	0	0	0	0	0	2	3	2	1
ME8693 / C312.5	3	3	3	2	0	0	0	0	0	0	0	2	3	2	1
Average	3	3	3	3	0	0	0	0	0	0	0	3	3	3	2

Sl. No.:46

Course Name: Finite Element Analysis

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
ME8692 / C313.1	3	3	2	3	0	0	0	0	1	0	0	3	3	1	3
ME8692 / C313.2	3	3	2	3	0	0	0	0	1	0	0	3	3	1	3
ME8692 / C313.3	3	3	2	3	0	0	0	0	1	0	0	3	3	1	3
ME8692 / C313.4	3	3	2	3	0	0	0	0	1	0	0	3	3	1	3
ME8692 / C313.5	3	3	2	3	0	0	0	0	1	0	0	3	3	1	3
Average	3	3	3	3	0	0	0	0	2	0	0	3	3	2	3

Sl. No.:47

Course Name: Hydraulics and Pneumatics

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
ME8694 / C314.1	2	1	1	1	0	0	0	0	0	0	0	1	2	1	1

ME8694 / C314.2	2	1	1	1	0	0	0	0	0	0	0	1	2	1	1
ME8694 / C314.3	2	1	1	1	0	0	0	0	0	0	0	1	2	1	1
ME8694 / C314.4	2	1	1	1	0	0	0	0	0	0	0	1	2	1	1
ME8694 / C314.5	2	1	1	1	0	0	0	0	0	0	0	1	2	1	1
Average	3	2	2	2	0	0	0	0	0	0	0	2	3	2	2

Sl. No.:48

Course Name: Automobile Engineering

Course Code / CO No	***Program Outcome***												***PSO***		
	1	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***1***	***2***	***3***
ME8091 / C318.1	2	1	2	1	0	0	0	0	1	0	0	1	1	2	1
ME8091 / C318.2	2	1	2	1	0	0	0	0	1	0	0	1	1	2	1
ME8091 / C318.3	2	1	2	1	0	0	0	0	1	0	0	1	1	2	1
ME8091 / C318.4	2	1	2	1	0	0	0	0	1	0	0	1	1	2	1
ME8091 / C318.5	2	1	2	1	0	0	0	0	1	0	0	1	1	2	1
Average	3	2	3	2	0	0	0	0	2	0	0	2	2	3	2

Sl. No.:49

Course Name: CAD / CAM Laboratory

Course Code / CO No	***Program Outcome***												***PSO***		
	1	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***1***	***2***	***3***
ME8681 / C315.1	2	2	2	2	3	0	0	0	2	0	0	1	2	2	1
ME8681 / C315.2	2	2	2	2	3	0	0	0	2	0	0	1	2	2	1
ME8681 / C315.3	2	2	2	2	3	0	0	0	2	0	0	1	2	2	1
ME8681 / C315.4	2	2	2	2	3	0	0	0	2	0	0	1	2	2	1
ME8681 / C315.5	2	2	2	2	3	0	0	0	2	0	0	1	2	2	1
Average	3	3	3	3	3	0	0	0	3	0	0	2	3	3	2

Sl. No.:50

Course Name: Design and Fabrication Project

Course Code / CO No	***Program Outcome***												***PSO***		
	1	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***1***	***2***	***3***
ME8682 / C316.1	3	3	3	3	2	0	0	2	2	2	3	3	2	2	3
ME8682 / C316.2	3	3	3	3	2	0	0	2	2	2	3	3	2	2	3
ME8682 / C316.3	3	3	3	3	2	0	0	2	2	2	3	3	2	2	3
ME8682 / C316.4	3	3	3	3	2	0	0	2	2	2	3	3	2	2	3
ME8682 / C316.5	3	3	3	3	2	0	0	2	2	2	3	3	2	2	3
Average	3	3	3	3	3	0	0	3	3	3	3	3	3	3	3

Sl. No.:51

Course Name: Professional Communication

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
HS8581 / C317.1	0	0	0	0	0	1	1	3	3	3	2	3	0	1	0
HS8581 / C317.2	0	0	0	0	0	1	1	3	3	3	2	3	0	1	0
HS8581 / C317.3	0	0	0	0	0	1	1	3	3	3	2	3	0	1	0
HS8581 / C317.4	0	0	0	0	0	1	1	3	3	3	2	3	0	1	0
HS8581 / C317.5	0	0	0	0	0	1	1	3	3	3	2	3	0	1	0
Average	0	0	0	0	0	2	2	3	3	3	3	3	0	2	0

Semester-VII

Sl. No.:52

Course Name: Power Plant Engineering

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
ME8792 / C401.1	3	1	1	1	0	1	3	0	0	1	0	1	2	2	1
ME8792 / C401.2	3	1	1	1	0	1	3	0	0	1	0	1	2	2	1
ME8792 / C401.3	3	1	1	1	0	1	3	0	0	1	0	1	2	2	1
ME8792 / C401.4	3	1	1	1	0	1	3	0	0	1	0	1	2	2	1
ME8792 / C401.5	3	1	1	1	0	1	3	0	0	1	0	1	2	2	1
Average	3	2	2	2	0	2	3	0	0	2	0	2	3	3	2

Sl. No.:53

Course Name: Process Planning and Cost Estimation

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
ME8793 / C402.1	3	2	2	2	0	0	0	0	1	0	1	1	2	1	1
ME8793 / C402.2	3	3	2	1	0	0	0	0	1	0	1	1	2	1	1
ME8793 / C402.3	3	3	2	2	0	0	0	0	1	0	1	1	2	1	1
ME8793 / C402.4	3	3	2	2	0	0	0	0	1	0	1	1	2	1	1
ME8793 / C402.5	3	3	2	2	0	0	0	0	1	0	1	1	2	1	1
Average	3	3	3	3	0	0	0	0	2	0	2	2	3	2	2

Sl. No.:54

Course Name: Mechatronics

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
ME8791 / C403.1	3	2	1	3	0	2	0	0	0	0	0	2	3	2	2
ME8791 / C403.2	3	2	1	3	0	2	0	0	0	0	0	2	3	2	2
ME8791 / C403.3	3	2	1	3	0	2	0	0	0	0	0	2	3	2	2
ME8791 / C403.4	3	2	1	3	0	2	0	0	0	0	0	2	3	2	2
ME8791 / C403.5	3	2	1	3	0	2	0	0	0	0	0	2	3	2	2
Average	3	3	2	3	0	3	0	0	0	0	0	3	3	3	3

Sl. No.:55

Course Name: Testing of Materials

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
OML751 / C407.1	3	1	1	0	1	1	0	0	0	0	0	2	2	2	1
OML751 / C407.2	3	1	1	0	1	1	0	0	0	0	0	2	2	2	1
OML751 / C407.3	3	1	1	0	1	1	0	0	0	0	0	2	2	2	1
OML751 / C407.4	3	1	1	0	1	1	0	0	0	0	0	2	2	2	1
OML751 / C407.5	3	1	1	0	1	1	0	0	0	0	0	2	2	2	1
Average	3	2	2	0	2	2	0	0	0	0	0	3	3	3	2

Sl. No.:56

Course Name: Unconventional Machining Processes

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
ME8073 / C408.1	3	0	1	0	1	0	1	0	1	1	0	1	2	2	1
ME8073 / C408.2	3	0	1	0	1	0	1	0	1	1	0	1	2	2	1
ME8073 / C408.3	3	0	1	0	1	0	1	0	1	1	0	1	2	2	1
ME8073 / C408.4	3	0	1	0	1	0	1	0	1	1	0	1	2	2	1
ME8073 / C408.5	3	0	1	0	1	0	1	0	1	1	0	1	2	2	1
Average	3	0	2	0	2	0	2	0	2	2	0	2	3	3	2

Sl. No.:57

Course Name: Non-Destructive Testing and Evaluation

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
ME8097 / C409.1	2	2	2	2	0	0	2	2	0	0	0	2	2	2	1
ME8097 / C409.2	3	2	2	2	0	0	2	2	0	0	0	2	2	2	1
ME8097 / C409.3	3	2	2	2	0	0	2	2	0	0	0	2	2	2	1

ME8097 / C409.4	3	2	2	2	0	0	2	2	0	0	0	2	2	2	1
ME8097 / C409.5	3	2	2	2	0	0	2	2	0	0	0	2	2	2	1
Average	3	3	3	3	0	0	3	3	0	0	0	3	3	3	2

Sl. No.:58

Course Name: Simulation and Analysis Laboratory

Course Code / CO No	***Program Outcome***												***PSO***		
	1	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***1***	***2***	***3***
ME8711 / C404.1	3	2	3	3	3	0	0	0	0	0	0	3	3	2	3
ME8711 / C404.2	3	2	3	3	3	0	0	0	0	0	0	3	3	2	3
ME8711 / C404.3	3	2	3	3	3	0	0	0	0	0	0	3	3	2	3
ME8711 / C404.4	3	2	3	3	3	0	0	0	0	0	0	3	3	2	3
ME8711 / C404.5	3	2	3	3	3	0	0	0	0	0	0	3	3	2	3
Average	3	3	3	3	3	0	0	0	0	0	0	3	3	3	3

Sl. No.:59

Course Name: Mechatronics Laboratory

Course Code / CO No	***Program Outcome***												***PSO***		
	1	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***1***	***2***	***3***
ME8781 / C405.1	3	2	1	1	1	0	0	0	0	0	0	0	1	2	3
ME8781 / C405.2	3	3	3	1	2	0	0	0	1	0	0	2	1	2	3
ME8781 / C405.3	3	1	2	1	2	0	2	0	0	0	0	0	1	2	3
ME8781 / C405.4	3	3	3	3	3	0	0	0	3	0	0	3	1	2	3
ME8781 / C405.5	3	3	3	3	3	0	2	0	3	0	0	3	1	2	3
Average	3	3	3	3	3	0	1	0	2	0	0	2	2	3	3

Sl. No.:60

Course Name: Technical Seminar

Course Code / CO No	***Program Outcome***												***PSO***		
	1	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***	***11***	***12***	***1***	***2***	***3***
ME8712 / C406.1	3	1	1	1	0	0	0	3	1	2	0	2	0	0	0
ME8712 / C406.2	3	1	1	1	0	0	0	3	1	2	0	2	0	0	0
ME8712 / C406.3	3	1	1	1	0	0	0	3	1	2	0	2	0	0	0
ME8712 / C406.4	3	1	1	1	0	0	0	3	1	2	0	2	0	0	0
ME8712 / C406.5	3	1	1	1	0	0	0	3	1	2	0	2	0	0	0
Average	3	2	2	2	0	0	0	3	2	3	0	3	0	0	0

Semester-VIII

Sl. No.:61

Course Name: Principles of Management

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
MG8591 / C410.1	0	0	1	1	0	3	2	3	2	3	2	3	0	1	0
MG8591 / C410.2	0	0	1	1	0	3	2	3	2	3	2	3	0	1	0
MG8591 / C410.3	0	0	1	1	0	3	2	3	2	3	2	3	0	1	0
MG8591 / C410.4	0	0	1	1	0	3	2	3	2	3	2	3	0	1	0
MG8591 / C410.5	0	0	1	1	0	3	2	3	2	3	2	3	0	1	0
Average	0	0	2	2	0	3	3	3	3	3	3	3	0	2	0

Sl. No.:62

Course Name: Production Planning and Control

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
IE8693 / C412.1	3	3	0	0	3	0	1	0	0	0	1	0	1	1	1
IE8693 / C412.2	3	2	0	0	3	0	0	0	0	0	0	0	1	1	1
IE8693 / C412.3	3	2	0	0	3	0	0	0	0	0	0	0	1	1	1
IE8693 / C412.4	3	2	2	0	0	0	0	0	0	0	0	0	1	1	1
IE8693 / C412.5	3	3	2	0	0	0	0	0	0	0	0	0	1	1	1
Average	3	3	1	0	3	0	1	0	0	0	1	0	2	2	2

Sl. No.:63

Course Name: Project Work

Course Code / CO No	Program Outcome												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
ME8811 / C411.1	3	3	0	2	0	2	2	3	3	3	0	3	3	2	2
ME8811 / C411.2	3	3	3	2	3	1	1	0	1	0	2	3	3	0	3
ME8811 / C411.3	3	3	3	3	3	2	2	0	2	0	0	0	3	0	2
ME8811 / C411.4	3	0	0	0	1	2	1	3	2	3	0	3	3	0	0
ME8811 / C411.5	2	3	3	0	0	0	0	0	3	0	3	3	3	0	0
Average	3	3	3	2	2	2	2	2	3	2	2	3	3	1	2

Table 8. Course Outcome and Articulation Matrix of 17 Regulation Courses (Batch 2019-2023)

Name of the course	Course code	CO'S	Contribution to Program Outcomes														
			PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3
Communicative English	HS8151	CO1:Read and write complete sentences in sharing information formally and informally.	1	1	1	1	1	3	3	3	1	3		3			
		CO2:Write freely by enhancing reading skills and writing skills.	1	1	1	1	1	3	3	3	1	3		3			
		CO3:Develop the basic grammar techniques and utilize them in enhancing language development.	2	3	2	3	2	3	3	3	2	3	3	3			
		CO4:Read different types of text and write personal letters and emails.	2	3	2	3	2	3	3	3	2	3	3	3			
		CO5:Read the longer text, write dialogues and short essays with rich vocabulary.	2	3	3	3		3	3	3	2	3		3			
Engineering Mathematics - I	MA8151	CO1:Describe the limit definition and rules of differentiation to differentiate functions.	3	3	1	1					2		2	3	2		1
		CO2:Discuss differentiation in partial differentiation to calculate the total derivatives, Jacobians and expansion of functions as Taylor's series of the functions of two variables.	3	3	1	1					2		2	3	2		1
		CO3:Explain the basics of integrals using various techniques of integrations and to derive the integration of functions using substitution, partial fractions, integration by parts and to estimate the improper integrals.	3	3	1	1					2		2	3	2		1
		CO4:Apply the knowledge of integration in computing multiple integrals and to obtain area, volume of regions using different techniques.	3	3	1	1					2		2	3	2		1
		CO5:Evaluate the solutions of differential equations using various techniques.	3	3	1	1					2		2	3	1		
Engineering Physics	PH8151	CO1:Apply the concepts of properties of matter in bending experiments.	3	3	2	1	1	1							2	1	

		CO2:Explain the concepts of waves and optical devices, their applications in fibre optics.	3	3	2	1	2	1										
		CO3:Describe the concepts of thermal properties of materials, instrumentation of thermal conductivity of good and bad conductors, their applications.	3	3	2	2	2	1						1	2	2		
		CO4:Discuss the concepts of quantum theory and its applications.	3	3	1	1	2	1										
		CO5:Analyze various crystal structures, and different crystal growth techniques.	3	3	1	1	2	1							1	1		
Engineering Chemistry	CY8151	CO1:Analyze the type of hardness present in water to treat the hardness producing salts by suitable water treatment techniques.	3	2	2	1		1	1					1		1		
		CO2:Describe the concept of adsorption and catalysis to apply in various fields.	2			1		2	2							1		
		CO3:Apply the phase rule in determining the degree of freedom of phase transformation, phases, phase composition.	3	1											2	1		
		CO4:Explain the types of fuels and their combustion.	3	1	1			1	2							1		
		CO5:Discuss the various nuclear reactions and energy storage devices.	3	1	2	1		2	2					2	2	1		
Problem Solving and Python Programming	GE8151	CO1:Develop solutions to simple computational problems using algorithms, flowchart, pseudocode.	3	3	3	3	2						2	2		1	2	
		CO2:Construct python programs with conditionals and loops..	3	3	3	3	2						2	2		1	2	
		CO3:Assess python program using the concept of functions.	3	3	3	3	2						2			1	2	
		CO4:Experiment with compound data using python lists, tuples, dictionaries.	2	2		2	2						1			1	2	
		CO5:Evaluating python programs by reading and writing data from/to files.	1	2			1						1			1	2	

Engineering Graphics	GE8152	CO1:Illustrate the fundamental engineering drawing standards, freehand sketching of basic geometrical construction, visualization concepts and multiple views of objects.	3	1	2		2					3		2	3		1
		CO2:Sketch orthographic projection of points, lines and plane surfaces.	3	1	2		2					3		2	3		1
		CO3:Develop projections of simple geometrical solids.	3	1	2		2					3		2	3		1
		CO4:Practice the projections of sectioned solids and the development of surfaces.	3	1	2		2					3		2	3		1
		CO5:Construct the isometric and perspective view of simple solids.	3	1	2		2					3		2	3		1
Problem Solving and Python Programming Laboratory	GE8161	CO1:Analyze simple python programs by writing, testing and debugging	3	3	3	3	3						3	2	3	1	2
		CO2:Develop python programs with conditionals and loops.	3	3	3	3	3						3	2	3	1	2
		CO3:Construct python program using the concept of functions.	3	3	3	3	2						2		3	1	2
		CO4:Test python programs using lists, tuples, dictionaries.	3	2		2	2						1		3	1	2
		CO5:Evaluating python programs by reading and writing data from/to files.	1	2			1						1		2	1	2
Physics and Chemistry Laboratory	BS8161	CO1:Determine the chemical parameters of water.	3	2	3	1	1								1	2	1
		CO2:Apply conductometric, potentiometric and PH titrations in various fields.	3	3	2	1	1								2		
		CO3:Employ the flame photometer and viscometer in identifying the concentration of polymers and environmental samples.	3	2	3	1	1								1		
		CO4:Explain in lasers, optics, modulus of elasticity, waves and oscillation, interference and thermal conductivity in experiments.	3	3	2	1	1								2	2	
		CO5:Discuss the bandgap of a semiconductor.	3	2	3	1	1										

Technical English	HS8251	CO1:Read short technical text, newspapers and reproduce definitions, instruction, issue, checklist and recommendations with correct usage of grammar.	3	3	3	3	3	3	3	3	2	3	3	3			
		CO2:Interpret charts, graphs, with the correct usage of impersonal passive voice and numerical adjectives.	3	3	3	3	3	3	3	3	2	3	3	3			
		CO3:Rearrange sequence words, embedded sentences, describe a process and prepare a technical presentation.	3	3	3	3	3	3	3	3	2	3	3	3			
		CO4:Write detailed comprehension, job application letter, resume and write different types of essays with correct usage of clauses.	3	3	3	3	2	3	3	3	2	3	3	3			
		CO5:Read short technical text, newspapers and reproduce definitions, instruction, issue, checklist and recommendations with correct usage of grammar.									3	3	3	3			
Engineering Mathematics - II	MA8251	CO1:Explain the concept of eigenvalues and eigenvectors and their role in matrices.	3	3	1	1	1				2		2	3	2		1
		CO2:Discuss differentiation and integration in vectors.	3	3	1	1	1				2		2	3	2		1
		CO3:Analyze the analytic functions, their properties to derive the various transformation.	3	3	1	1	1				2		2	3	2		1
		CO4:Apply the knowledge of integration in complex functions and compute the values of integration.	3	3	1	1	1				2		2	3	2		1
		CO5:Describe the concept of Laplace Transform to derive the solution of differential equations.	3	3	1	1	1				2		2	3	1		1
Materials Science	PH8251	CO1:Explain phase diagrams and microstructural change during the cooling of iron.	3	2	1	2	1	1							2	1	1
		CO2:Describe the iron-carbon equilibrium diagram, T-T-T-diagram for various steels, microstructures of alloys and diffusion in solids.	3	2	1	1	2	1	1						2	1	1
		CO3:Discuss the various tests to find the mechanical properties of materials.	3	2	2	2	2	1							2	1	1

		CO4:Interpret on dielectric, magnetic and superconducting properties of various materials	3	2	2	1	2	2						1	2	1	1
		CO5:Summarize the basics of composites, ceramics, alloys and nanomaterials.	3	2	2	1	2	1							2	1	1
Basic Electrical, Electronics and Instrumentation Engineering	BE8253	CO1:Analyse DC circuits using mesh, nodal analysis and network theorems.	2	2	1					1				2	2	1	
		CO2:Summarize the basic concepts on AC circuits and wiring concepts	2	2	1					1				2	2	1	
		CO3:Explain the constructional details, types and working principle of various electrical machines.	2	1	1					1				2	2	1	
		CO4:Describe the fabrication, working principle and operation electronic devices.	2	2	1					1				2	2	1	
		CO5:Choose appropriate instrument in measurement of electrical parameters for a specific application.	2	2	1					1				2	2	1	
Environmental Science and Engineering	GE8291	CO1:Explain the structure and functions of the forest, grassland, desert, aquatic ecosystems and the values, threats of biodiversity for the survival of mankind.	2	1				2	3					2	1		
		CO2:Evaluate the effects and control measures of air, water, soil, marine, noise, nuclear and thermal pollution.	3	2				3	3					2	1		
		CO3:Analyze the importance of non-renewable energy sources and renewable energy sources and the role of an individual in the conservation of natural resources	3		1			2	2					2	1		
		CO4:Discuss the concepts, methodologies of social issues and the environment	3	2	1	1		2	2					2	1		
		CO5:Describe the family welfare, human rights and value education.	3	2	1			2	2					1	1		
Engineering Mechanics	GE8292	CO1:Describe the vectorial and scalar representation of forces and moments.	3	2	2	1	2							2	3	1	2

		CO2:Apply equilibrium equations in the rigid bodies.	3	2	2	1	2							2	3	1	2
		CO3:Calculate the properties of surfaces and solids such as centroid, first and second moment of area.	3	2	3	1	2							2	3	1	2
		CO4:Determine the dynamic forces exerted in the rigid body using apply Newton's law of motion.	3	2	3	1	2							2	3	1	2
		CO5:Discuss the friction, velocity and acceleration of rigid bodies.	3	2	3	1	2							2	3	1	2
Engineering Practices Laboratory	GE8261	CO1:Articulate the need of the experimentation and tools required to complete the experiment.	3	2			1	1	1					2	2	1	1
		CO2:Persuade the standard procedure to perform the experiment.	3	2			1	1	1					2	2	1	1
		CO3:Illustrate the experiment / Job / tool / equipment involved in the experiment.	3	2			1	1	1					2	2	1	1
		CO4:Interpret the finished job with its accuracy.	3	2			1	1	1					2	2	1	1
		CO5:Conclude the experiment clearly and showcase or file the finished job for future record	3	2			1	1	1					2	2	1	1
Basic Electrical, Electronics and Instrumentation Engineering Laboratory	BE8261	CO1:Determine the speed characteristics of different electrical machines.	3	3	2	1	1			2	2				2	1	1
		CO2:Develop simple circuits involving diodes and transistors.	3	3	2	1	1			2	2				2	1	1
		CO3:Employ operational amplifiers in simple electronic circuits.	3	3	2	1	1			2	2				2	1	1
		CO4:Illustrate the characteristics of transducers.	3	3	2	1	1			2	2				2	1	1
		CO5:Experiment with measuring instruments.	3	3	2	1	1			2	2				2	1	1
Transforms and Partial Differential Equations	MA6351	CO1:Explain the concept of standard partial differential equations.	3	3	1	1					2			3	1	1	2
		CO2:Analyze the Fourier series which plays a vital role in engineering applications.	3	3	1	1					2			3	1	1	2
		CO3:Apply the Fourier series techniques in deriving one and two-dimensional heat flow problems and one-dimensional wave equations.	3	3	1	1					2			3	1	1	2

		CO4:Discuss the Fourier transforms and physical problems of engineering.	3	3	1	1					2			3	1	1	2
		CO5:Describe the Z transform techniques for discrete-time systems.	3	3	1	1					2			3	1	1	2
Engineering Thermodynamics	ME8391	CO1:Describe the basic concepts of Thermodynamics, laws and Energy involved.	3	3	2	1								2	3	2	1
		CO2:Apply the concepts of II Law, Entropy in open and closed systems.	3	3	2	1								2	3	2	1
		CO3:Explain the properties of steam, its application and the performance of various thermodynamic cycles.	3	3	2	1					1		1	2	3	2	1
		CO4:Discuss the characteristics of ideal and real gases.	3	3	2	1		1			2		1	2	3	2	1
		CO5:Determine the psychometric properties of gas and air mixtures.	3	3	2	1		1			2		1	2	3	2	1
Fluid Mechanics and Machinery	CE8394	CO1:Calculate fluid properties and characteristics of flow mathematically.	3	3	2	2	1	2	2	1	2	1	1	2	3	2	1
		CO2:Determine major and minor losses associated with pipe flow in piping networks.	3	3	3	2	1	2	2	1	2	1	1	2	3	2	1
		CO3:Estimate mathematically the nature of physical quantities.	3	3	3	3	1	2	2	1	2	1	1	2	3	2	1
		CO4:Analyze the performance of pumps.	3	3	3	3	1	2	2	1	2	1	1	3	3	2	1
		CO5:Calculate the performance of turbines.	3	3	3	3	1	2	2	1	2	1	1	3	3	2	1
Manufacturing Technology – I	ME8351	CO1:Explain various metal casting processes, corresponding defects, advantages and disadvantages.	3		2			2	3	1	1			1	3	3	1
		CO2:Compare various metal joining processes.	3		2			2	3	1	1			1	3	3	1
		CO3:Summarize different hot and cold working methods of metals.	3		2			2	2	1	1			1	3	3	1
		CO4:Explain different sheet metal processes.	3		2			2	2	1	1			1	3	3	1
		CO5:Distinguish different techniques of manufacturing plastic components.	3		2			2	2	1	1			1	3	3	1

Electrical Drives and Controls	EE8353	CO1:Define the types of electric drives, heating and cooling curves and selection of power rating for drive motors.	2	1	1						1			1	2	1	1
		CO2:Interpret basic concepts of different types of electrical machines and their performance.	2	1	1						1			1	2	1	1
		CO3:Summarize the different methods of starting DC motors and induction motors.	2	1	1						1			1	2	1	1
		CO4:Explain the conventional and solid-state speed control of DC motor drives.	2	1	1						1			1	2	1	1
		CO5:Discuss the conventional and solid-state speed control of AC motor drives.	2	1	1						1			1	2	1	1
Manufacturing Technology Laboratory – I	ME8361	CO1:Articulate the need of the experimentation and tools required to complete the experiment.	3						1		2			1	1	2	2
		CO2:Persuade the standard procedure to perform the experiment.	3						1		2			1	1	2	2
		CO3:Illustrate the experiment / Job / tool / equipment involved in the experiment.	3						1		2			1	1	2	2
		CO4:Tabulate / record / interpret the result by using the formula or other methods.	3						1		2			1	1	2	2
		CO5:Conclude the experiment clearly.	3						1		2			1	1	2	2
Computer Aided Machine Drawing	ME8381	CO1:Articulate the need and tools required to complete the 2D drafting / 3D modelling.	1	2			3				3	2		3	2	2	2
		CO2:Persuade the standard procedure to perform the 2D drafting / 3D modelling.	1	2			3				3	2		3	2	2	2
		CO3:Illustrate the commands / program involved in the 2D drafting / 3D modelling.	1	2			3				3	2		3	2	2	2
		CO4:Record / interpret the result as 3D orthographic views.	1	2			3				3	2		3	2	2	2
		CO5:Conclude the 2D drafting / 3D modelling clearly.	1	2			3				3	2		3	2	2	2

Electrical Engineering Laboratory	EE8361	CO1:Articulate the need of the experimentation and tools required to complete the experiment.	3	1	3			1						2	1	1	1
		CO2:Persuade the standard procedure to perform the experiment.	3	1	3			1						2	1	1	1
		CO3:Illustrate the experiment / Job / tool / equipment involved in the experiment.	3	1	3			1						2	1	1	1
		CO4:Tabulate / record / interpret the result by using the formula or other methods.	3	1	3			1						2	1	1	1
		CO5:Conclude the experiment clearly.	3	1	3			1						2	1	1	1
Interpersonal Skills / Listening & Speaking	HS8381	CO1:Explain the importance of speaking, ask for clarification to improve pronunciation and articulate a complete idea as opposed to producing fragmented utterance.		1	3	2		2	2	3	2	3	2	2			
		CO2:Discuss the process information as part of a simple explanation and compare and contrast information and ideas from multiple sources to converse with reasonable accuracy over a wide range of everyday topics.		1	3	2		2	2	3	2	3	2	2			
		CO3:Practice for accuracy and fluency to deliver a five-minute informal talk by greeting others and inviting and declining an offer, describe health and symptoms.		1	3	2		2	2	3	2	3	2	2			
		CO4:Justify in a group discussion by giving verbal and non-verbal feedback and summarizing academic reading.		1	3	2		2	2	3	2	3	2	2			
		CO5:Interpret formal and informal talk in an academic and business context and group/ pair presentation by giving directions and instructions.		1	3	2		2	2	3	2	3	2	2			
	MA8452	CO1:Apply the concept of testing of hypothesis for small and large samples in real-life problems.	3	3	1	1					2			3	3	1	3

Statistics and Numerical Methods		CO2:Explain the basic concepts of the design of experiments in the field of agriculture.	3	3	1	1					2			3	3	1	3
		CO3:Describe the basic concepts and techniques of solving algebraic and transcendental equations.	3	3	1	1					2			3	3	1	2
		CO4:Appreciate the numerical techniques of interpolation and differentiation and integration for engineering problems.	3	3	1	1					2			3	3	1	2
		CO5:Explain the various techniques and methods for solving differential equations.	3	3	1	1					2			3	3	1	1
Kinematics of Machinery	ME8492	CO1:Illustrate the basic mechanisms, linkage, mobility, mechanical advantage and degrees of freedom	3	2	2									2	3	1	1
		CO2:Analyze the displacement, velocity and acceleration analysis of simple mechanisms by using the graphical method as well as instantaneous centre method.	3	2	2									2	3	1	1
		CO3:Discuss the motion resulting from a specified set of linkages, and cam mechanisms for specified output motions and develop a cam Profile.	3	2	2									2	3	1	1
		CO4:Apply the basic concepts of gears and gear trains along with toothed gearing and kinematics of gear trains.	3	2	2									2	3	1	1
		CO5:Evaluate the effects of friction in motion transmission and in machine components.	3	2	2									2	3	1	1
Manufacturing Technology– II	ME8451	CO1:Explain the mechanism of material removal processes.	3	3	3	1	1							2	3	3	2
		CO2:Discuss the construction and operational features of centre lathe and other special-purpose lathes.	3	3	3	1	1							2	3	2	2
		CO3:Describe the features of the shaper, planer, milling, drilling, sawing and broaching machines.	3	3	3	1	1							2	3	2	2

		CO4:Explain the various grinding and other superfinishing processes apart from gear manufacturing processes.	3	3	2	1	1							2	3	2	2
		CO5:Summarize numerical control of machine tools to develop the part program.	3	3	3	1	1							2	3	2	3
Engineering Metallurgy	ME8491	CO1:Apply phase diagram, Iron-Iron carbon diagram, Gibb's phase rule and lever rule to identify or derive the property for a material.	3	1	3	2								2	2	1	2
		CO2:Discuss isothermal transformation diagram, continuous cooling diagrams and different heat treatment processes to identify or derive the property for a material.	3	1	3	1		2		1				2	2	1	2
		CO3:Explain the effect of alloying elements on ferrous and non-ferrous metals.	3	1	3									2	2	1	2
		CO4:Describe the properties and applications of non-metallic materials.	3	1	3				2					2	2	1	2
		CO5:Evaluate the mechanical properties of the material by various testing methods.	3	1	3	2	2							2	2	1	2
Strength of Materials for Mechanical Engineers	CE8395	CO1:Explain the concepts of stress and strain, principal stresses and principal planes.	3	1	3	3								3	3	3	1
		CO2:Determine shear force and bending moment in beams.	3	3	3	3								3	3	3	1
		CO3:Apply torsion equation in circular and helical springs design.	3	3	3	3								3	3	3	1
		CO4:Calculate the deflection of beams and slope by different methods.	3	3	3	3								3	3	3	1
		CO5:Estimate the stress and strain associated with thin and thick cylinders.	3	3	3	3								3	3	3	1
Thermal Engineering– I	ME8493	CO1:Apply thermodynamic concepts to different gas power cycles, steam power cycles for solving problems.	3	2	1	1								1	2	1	1
		CO2:Explain the working of different types of compressor and the performance of reciprocating compressor.	3	2	2	1								1	2	1	1

		CO3:Describe the working of IC engines, requirement and the difference between SI and CI engines.	3	2	2	1								1	2	1	1
		CO4:Discuss the performance characteristic of IC engines.	3	2	1	1								1	2	1	1
		CO5:Interpret the concept and working of gas turbine and their performance.	3	2	1	1								1	2	1	1
Manufacturing Technology Laboratory–II	ME8462	CO1:Articulate the need of the experimentation and tools required to complete the experiment.	3				2		1		2			1	1	2	2
		CO2:Persuade the standard procedure to perform the experiment.	3				2		1		2			1	1	2	2
		CO3:Illustrate the experiment / Job / tool / equipment involved in the experiment.	3				2		1		2			1	1	2	2
		CO4:Tabulate / record / interpret the result by using the formula or other methods.	3				2		1		2			1	1	2	2
		CO5:Conclude the experiment clearly.	3				2		1		2			1	1	2	2
Strength of Materials and Fluid Mechanics and Machinery Laboratory	CE8381	CO1:Articulate the need of the experimentation and tools required to complete the experiment.	3	2	1									3	3	3	2
		CO2:Persuade the standard procedure to perform the experiment.	3	2	1									3	3	3	2
		CO3:Illustrate the experiment / Job / tool / equipment involved in the experiment.	3	2	1									3	3	3	2
		CO4:Tabulate / record / interpret the result by using the formula or other methods.	3	2	1									3	3	3	2
		CO5:Conclude the experiment clearly.	3	2	1									3	3	3	2
Advanced Reading and Writing	HS8461	CO1:Read to evaluate the text intelligently and write a descriptive paragraph.						1	1	3	3	3	2	3	1	1	1
		CO2:Interpret the findings with appropriate technological / research citation.						1	1	3	3	3	2	3	1	1	1

		CO3:Write different types of essays, understand parts of speech and use appropriate connectives in writing a paragraph.						1	1	3	3	3	2	3	1	1	1
		CO4:Develop effective resumes and job application letters.						1	1	3	3	3	2	3	1	1	1
		CO5:Prepare letters of recommendation and perform critical thinking in various professional contexts.						1	1	3	3	3	2	3	1	1	1
Thermal Engineering- II	ME8595	CO1:Solve problems in the steam nozzle.	3	3	3	2					1			1	3	2	1
		CO2:Explain the functioning and features of different types of boilers and their auxiliaries.	3	3	3	2					1			1	3	2	1
		CO3:Calculate the flow parameters, work done, efficiency and draw velocity diagrams in steam turbines.	3	3	3	2					1			1	3	2	1
		CO4:Summarize the concept of cogeneration, working features of heat pumps and heat exchangers.	3	3	3	2					1			1	3	2	1
		CO5:Evaluate the refrigeration and air – conditioning problems using a refrigerant table, charts and psychrometric charts.	3	3	3	2					1			1	3	2	1
Design of Machine Elements	ME8593	CO1:Compute the stress acting on various machine elements.	2	2	3					1	1			2	3	2	2
		CO2:Compute the dimensions, stress requirements of shaft and couplings based on various load conditions.	2	2	3					1	1			2	3	2	2
		CO3:Summarize temporary and permanent joints based on application requirements.	2	2	3					1	1			2	3	2	2
		CO4:Compute the dimensions of the energy-storing devices for specific applications.	2	2	3					1	1			2	3	2	2
		CO5:Analyze different types of bearings for static and dynamic load.	2	2	3					1	1			2	3	2	2
Metrology and Measurements	ME8501	CO1:Apply the concepts of various types of measurements used in different metrological instruments.	3	2	2	2					1			1	3	2	1

		CO2:Explain the principles of linear and angular measurement tools used for industrial applications.	3	2	2	2					1			1	3	2	1
		CO3:Analyze the different advanced measuring instruments using procedures especially for conducting computer-aided inspection.	3	2	2	2					1			1	3	2	1
		CO4:Choose the techniques used for form measurement in industrial applications and structures.	3	2	2	2					1			1	3	2	1
		CO5:Discuss the measuring techniques of mechanical properties measuring instruments in industrial applications.	3	2	2	2					1			1	3	2	1
Dynamics of Machines	ME8594	CO1:Analyze static and dynamic forces of planar mechanisms in both graphical and analytical methods.	3	2	2		2			1				1	3	1	1
		CO2:Calculate the balancing of reciprocating and rotating masses, the unbalanced forces and couple in a system.	3	2	2		2			1				1	3	1	1
		CO3:Compute the damped and undamped free vibration of the systems.	3	2	2		2			1				1	3	1	1
		CO4:Determine the frequency of forced vibration, critical speed and torsional vibration of the shaft.	3	2	2		2			1				1	3	1	1
		CO5:Estimate the speed and lift of the governor and also the gyroscopic effect on automobiles, ships and airplanes.	3	2	2		2			1				1	3	1	1
Environment and Agriculture	OAI551	CO1:Appreciate the role of environment in the current practice and concerns the sustainability of agriculture.	1	2	2			2	3	1			1	2	1	2	1
		CO2:Discuss the development, problems in irrigation systems.	1	2	2			2	3	1			2	2	1	2	1
		CO3:Describe the global warming, ecosystem changes and desertification.	1	2	2			2	3	1			1	2	1	2	1
		CO4:Explain ecological diversity and farming principles.	1	2	2			2	3	1			1	2	1	2	1
		CO5:Interpret the global environmental governance, agricultural environment policies and its impacts.	1	2	2			2	3	1			1	2	1	2	1
Kinematics and Dynamics Laboratory	ME8511	CO1:Articulate the need of the experimentation and tools required to complete the experiment.	3	1	1	1	1						1	1	2	2	1

		CO2:Persuade the standard procedure to perform the experiment.	3	2	1	2	1						1	1	2	2	1
		CO3:Illustrate the experiment / Job / tool / equipment involved in the experiment.	3	2	1	2	1						1	1	2	2	1
		CO4:Tabulate / record / interpret the result by using the formula or other methods.	3	2	1	2	1						1	1	2	2	1
		CO5:Conclude the experiment clearly.	3	2	1	2	1						1	1	2	2	1
Thermal Engineering Laboratory	ME8512	CO1:Articulate the need of the experimentation and tools required to complete the experiment.	2	2	1	1					1			1	2	1	1
		CO2:Persuade the standard procedure to perform the experiment.	2	2	1	1					1			1	2	1	1
		CO3:Illustrate the experiment / Job / tool / equipment involved in the experiment.	2	2	1	1					1			1	2	1	1
		CO4:Tabulate / record / interpret the result by using the formula or other methods.	2	2	1	1					1			1	2	1	1
		CO5:Conclude the experiment clearly.	2	2	1	1					1			1	2	1	1
Metrology and Measurements Laboratory	ME8513	CO1:Articulate the need of the experimentation and tools required to complete the experiment.		2	2	3		2	2		1	2	2		3	2	2
		CO2:Persuade the standard procedure to perform the experiment.		2	2	3		2	2		1	2	2		2	2	2
		CO3:Illustrate the experiment / Job / tool / equipment involved in the experiment.		2	2	3		2	2		1	2	2		3	2	2
		CO4:Tabulate / record / interpret the result by using the formula or other methods.		2	2	3		2	2		1	2	2		3	2	2
		CO5:Conclude the experiment clearly.		2	2	3		2	2		1	2	2		3	2	2
Design of Transmission Systems	ME8651	CO1:Apply the design parameters of flexible transmission elements like belts, chains and wire ropes for a given condition.	3	2	3	1					1			1	2	3	2

		CO2:Explain the spur and helical gear terminology considering the strength and wear.	3	2	3	1					1			1	2	3	2
		CO3:Compute the required parameters in designing worm, bevel and double-helical gear power transmission.	3	2	3	1					1			1	2	3	2
		CO4:Analyzing the speed ratio and gearbox parameters for the given application.	3	2	3	1					1			1	2	3	2
		CO5:Evaluate the parameters require to design cam, clutches and brakes for varied applications.	3	2	3	1					1			1	2	3	2
Computer Aided Design and Manufacturing	ME8691	CO1:Explain the basic concept of product design and 2D / 3D CAD transformations.	3	3	2	2	2		1		1			1	3	2	2
		CO2:Discuss the representation of curves, surface solid modeling techniques for various real-time applications.	3	3	2	2	2		1		1			1	3	2	2
		CO3:Describe the different types of Standard systems used in CAD.	3	3	2	2	2		1		1			1	3	2	2
		CO4:Apply NC & CNC programming concepts to develop part programme for Lathe & Milling Machines.	3	3	2	2	2		1		1			1	3	2	2
		CO5:Discuss the different types of techniques used in Cellular Manufacturing and FMS.	3	3	2	2	2		1		1			1	3	2	2
Heat and Mass Transfer	ME8693	CO1:Apply heat conduction equations to various surfaces under steady-state and transient condition problems.	3	3	3	2								2	3	2	1
		CO2:Solve free and forced convective heat transfer correlations to internal and external flows through/over various surface configurations.	3	3	3	2								2	3	2	1
		CO3:Explain the phenomena of boiling and condensation, LMTD and NTU methods of thermal analysis in heat exchanger problems.	3	3	3	2								2	3	2	1
		CO4:Describe basic laws for radiation and radioactive heat transfer between different types of surface problems.	3	3	3	2								2	3	2	1

		CO5:Choose diffusive and convective mass transfer equations for different applications.	3	3	3	2								2	3	2	1
Finite Element Analysis	ME8692	CO1:Summarize the basics of finite element formulation.	3	3	2	3					1			3	3	1	3
		CO2:Apply finite element formulations to solve one-dimensional problem.	3	3	2	3					1			3	3	1	3
		CO3:Choose finite element formulations to solve two-dimensional scalar problems.	3	3	2	3					1			3	3	1	3
		CO4:Illustrate finite element method to solve two-dimensional vector problems.	3	3	2	3					1			3	3	1	3
		CO5:Explain the finite element method to solve problems on isoparametric element problems.	3	3	2	3					1			3	3	1	3
Hydraulics and Pneumatics	ME8694	CO1:Explain the fluid power and its applications, selection of fluid and various types of fluid power pumps.	2	1	1	1								1	2	1	1
		CO2:Discuss the features, applications and functions of different types of hydraulic motors, actuators and flow control valves.	2	1	1	1								1	2	1	1
		CO3:Apply the hydraulic components to make the different types of hydraulic circuits and the applications of various hydraulic systems.	2	1	1	1								1	2	1	1
		CO4:Analyze the different pneumatic components, applications and design of pneumatic circuits and systems.	2	1	1	1								1	2	1	1
		CO5:Evaluate the hydraulic and pneumatic systems, various troubleshooting methods used for different applications and structures.	2	1	1	1								1	2	1	1
Automobile Engineering	ME8091	CO1:Explain the various types of chassis, frames and components of IC engine parts.	2	1	2	1					1			1	1	2	1
		CO2:Describe the injection and ignition system used in SI and CI engine.	2	1	2	1					1			1	1	2	1
		CO3:Distinguish between the manual transmission systems with automatic transmission systems.	2	1	2	1					1			1	1	2	1

		CO4:Discuss the function of steering brakes and suspension systems.	2	1	2	1					1			1	1	2	1
		CO5:Show the importance of alternative fuels.	2	1	2	1					1			1	1	2	1
CAD / CAM Laboratory	ME8681	CO1:Articulate the need and tools required to complete the 2D drafting / 3D modelling.	2	2	2	2	3				2			1	3	3	1
		CO2:Persuade the standard procedure to perform the 2D drafting / 3D modelling.	2	2	2	2	3				2			1	3	3	1
		CO3:Illustrate the tool / program involved in the 2D drafting / 3D modelling.	2	2	2	2	3				2			1	3	3	1
		CO4:Tabulate / record / interpret the result by using the formula or other methods.	2	2	2	2	3				2			1	3	3	1
		CO5:Conclude the 2D drafting / 3D modelling clearly.	2	2	2	2	3				2			1	3	3	1
Design and Fabrication Project	ME8682	CO1:Establish formulation, analysis and solve complex problems.	3	3	3	3	2			2	2	2	3	3	2	2	3
		CO2:Apply effectively with written, oral and visual means in a technical setting.	3	3	3	3	2			2	2	2	3	3	2	2	3
		CO3:Compare modern design and analysis tools.	3	3	3	3	2			2	2	2	3	3	2	2	3
		CO4:Construct system components related to engineering problems giving considerations to the environment and society.	3	3	3	3	2			2	2	2	3	3	2	2	3
		CO5:Support to serve as an effective team member to plan and complete the project.	3	3	3	3	2			2	2	2	3	3	2	2	3
Professional Communication	HS8581	CO1:Employ required soft skills to successfully execute the job on hand.						1	1	3	3	3	2	3	1	1	1
		CO2:Classify the content material and make effective presentations.						1	1	3	3	3	2	3	1	1	1
		CO3:Correlate favorably to the values of others opinion and manage difficult						1	1	3	3	3	2	3	1	1	1
		CO4:situations in group discussions wisely.						1	1	3	3	3	2	3	1	1	1

		CO5:Express intelligently during job interviews and be successful.						1	1	3	3	3	2	3	1	1	1
Power Plant Engineering	ME8792	CO1:Explain the various subsystems of the coal power plant.	3	1	1	1		1	3			1		1	2	2	1
		CO2:Calculate the efficiency of gas power cycles.	3	1	1	1		1	3			1		1	2	2	1
		CO3:Describe the layout, construction and working of the components inside the different types of nuclear power plants.	3	1	1	1		1	3			1		1	2	2	1
		CO4:Discuss the working principle of various renewable energy power plants.	3	1	1	1		1	3			1		1	2	2	1
		CO5:Analyze the economy of power generation and the environmental hazards.	3	1	1	1		1	3			1		1	2	2	1
Process Planning and Cost Estimation	ME8793	CO1:Choose the process, equipment and tools for various products.	3	2	2	2					1		1	1	2	1	1
		CO2:Prepare process planning activity chart based on various process parameters.	3	3	2	1					1		1	1	2	1	1
		CO3:Describe the concept of cost estimation and its procedure.	3	3	2	2					1		1	1	2	1	1
		CO4:Estimate the cost for a job in a forging shop, welding shop and foundry shop.	3	3	2	2					1		1	1	2	1	1
		CO5:Calculate the time for machining in various machining operations.	3	3	2	2					1		1	1	2	1	1
Mechatronics	ME8791	CO1:Explain the various types of sensors used in mechatronics systems and their applications.	3	2	1	3		2						2	3	2	3
		CO2:Discuss the architecture of microprocessor and microcontroller, pin diagram, addressing modes of microprocessor and microcontroller.	3	2	1	3		2						2	3	2	3
		CO3:Describe the architecture of 8255 PPI, and various device interfacing.	3	2	1	3		2						2	3	2	3
		CO4:Explain the architecture, programming and application of programmable logic controllers.	3	2	1	3		2						2	3	2	3

		CO5:Apply the knowledge acquired from various case studies in the mechatronics system.	3	2	1	3		2						2	3	2	3
Testing of Materials	OML751	CO1:Classify material testing, purpose and their standards.	3	1	1		1	1						2	2	2	1
		CO2:Discuss mechanical testing to find properties of the various materials.	3	1	1		1	1						2	2	2	1
		CO3:Justify the selection of non destructive testing for different materials.	3	1	1		1	1						2	2	2	1
		CO4:Explain material characterization testing with advantages and limitations.	3	1	1		1	1						2	2	2	1
		CO5:Describe thermal testing, dynamic mechanical analysis and chemical testing.	3	1	1		1	1						2	2	2	1
Unconventional Machining Processes	ME8073	CO1:Explain the need for unconventional machining processes and their classification.	3		1		1		1		1	1		1	2	2	2
		CO2:Compare different thermal energy and electrical energy based unconventional machining processes.	3		1		1		1		1	1		1	2	2	2
		CO3:Summarize various chemical and electrochemical energy based unconventional machining processes.	3		1		1		1		1	1		1	2	2	2
		CO4:Explain various nano abrasives based unconventional machining processes.	3		1		1		1		1	1		1	2	2	2
		CO5:Distinguish various recent trends based unconventional machining processes.	3		1		1		1		1	1		1	2	2	2
Non Destructive Testing and Evaluation	ME8097	CO1:Differentiate NDT methods with destructive testing.	2	2	2	2			2	2				2	2	2	1
		CO2:Apply the knowledge of various surface NDE methods to the testing of materials.	3	2	2	2			2	2				2	2	2	1
		CO3:Explain thermography and eddy current testing methods on testing of materials.	3	2	2	2			2	2				2	2	2	1

		CO4:Describe ultrasonic and acoustic emission testing methods on testing of materials.	3	2	2	2			2	2				2	2	2	1
		CO5:Discuss the radiography method of testing of materials.	3	2	2	2			2	2				2	2	2	1
Simulation and Analysis Laboratory	ME8711	CO1:Define and illustrate the need for simulation and analysis for real-world problems.	3	2	3	3	3							3	3	2	3
		CO2:Interpret and make use of different features in the simulation and analysis tools.	3	2	3	3	3							3	3	2	3
		CO3:Make use of the simulation software to construct and execute mechanical engineering problems.	3	2	3	3	3							3	3	2	3
		CO4:Model real-world problems and analyze the effect of various mechanical and thermal forces through simulation.	3	2	3	3	3							3	3	2	3
		CO5:Analyze the model and apply the results to resolve critical issues in real-world engineering problems.	3	2	3	3	3							3	3	2	3
Mechatronics Laboratory	ME8781	CO1:Articulate the need of the experimentation and tools required to complete the experiment.	3	2	1	1	1								1	2	3
		CO2:Persuade the standard procedure to perform the experiment.	3	3	3	1	2				1			2	1	2	3
		CO3:Illustrate the experiment / Job / tool / equipment involved in the experiment.	3	1	2	1	2		2						1	2	3
		CO4:Tabulate / record / interpret the result by using the formula or other methods.	3	3	3	3	3				3			3	1	2	3
		CO5:Conclude the experiment clearly.	3	3	3	3	3		2		3			3	1	2	3
Technical Seminar	GE6757	CO1:Improve their communication skill.	3	1	1	1				3	1	2		2	3	2	1
		CO2:Improve their presentation skill.	3	1	1	1				3	1	2		2	3	2	1
		CO3:Review the latest and recent trends and technologies.	3	1	1	1				3	1	2		2	3	2	1
		CO4:Effectively write technical report.	3	1	1	1				3	1	2		2	3	2	1

		CO5:Successfully face the technical committee.	3	1	1	1				3	1	2		2	3	2	1
Principles of Management	MG8591	CO1:Explain management, organization and its principles.			1	1		3	2	3	2	3	2	3	1	1	1
		CO2:Discuss the planning process, tools, techniques and also decision making steps.			1	1		3	2	3	2	3	2	3	1	1	1
		CO3:Describe organisation structure, chart, delegation of authority and HR planning process.			1	1		3	2	3	2	3	2	3	1	1	1
		CO4:Develop constructive mind in making and designing management by proper direction through alternative plans and solutions by the study of management functions like planning, organising, directing and controlling.			1	1		3	2	3	2	3	2	3	1	1	1
		CO5:Illustrate a clear picture of understanding of managerial functions like planning, organizing, staffing, leading & controlling to make good management and organisation.			1	1		3	2	3	2	3	2	3	1	1	1
Production Planning and Control	IE8693	CO1:Discuss the production planning processes to convert the raw material into a finished product.	3	3			3		1				1		2	1	1
		CO2:Prepare production planning activities chart for work-study to reduce the production time.	3	2			3								2	1	1
		CO3:Appraise the product planning and process planning used for improving the market sale of an existing product.	3	2			3								2	1	1
		CO4:Develop the production schedule for the given set of products.	3	2	2										2	1	1
		CO5:Explain inventory control activities to reduce inventory costs.	3	3	2										2	1	1
Project Work	ME8811	CO1:Analyze a specific problem, engineering needs and identifying the ways and means to provide solution through literature review.	3	3		2		2	2	3	3	3		3	3	2	2
		CO2:Choose an appropriate methodology, tools and techniques to complete the project in the easiest way.	3	3	3	2	3	1	1		1		2	3	3		3

		CO3:Validate and compare the project outcome with expected results.	3	3	3	3	3	2	2		2				3		2
		CO4:Prepare manuscripts for scientific records.	3				1	2	1	3	2	3		3	3		
		CO5:Administer the project for time schedule and financial plans.	2	3	3						3		3	3	3		

JUSTIFICATION OF CO PO MAPPING

COURSE OUTCOME MAPPING WITH PROGRAM OUTCOME LEVEL JUSTIFICATION

REGULATION : 2017

YEAR/SEM : IV/VII

COURSE NAME/COURSE CODE: ME8793 / PROCESS PLANNING AND COST ESTIMATION

Program Outcomes (POs) for Undergraduate Engineering Programs in table form:

PO No.	Program Outcome (PO)
PO1	**Engineering Knowledge**: Apply knowledge of mathematics, science, engineering fundamentals, and specialization to solve complex engineering problems.
PO2	**Problem Analysis**: Identify, formulate, research literature, and analyze complex engineering problems to reach substantiated conclusions using principles of mathematics and sciences.
PO3	**Design/Development of Solutions**: Design solutions for complex engineering problems and system components or processes that meet specified needs with appropriate consideration for public health, safety, and environmental concerns.

PO4	**Conduct Investigations of Complex Problems**: Use research-based knowledge and methods, including experimentation, analysis, and interpretation of data, to provide valid conclusions.
PO5	**Modern Tool Usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools to complex engineering activities with an understanding of limitations.
PO6	**The Engineer and Society**: Apply contextual knowledge to assess societal, health, safety, legal, and cultural issues relevant to professional engineering practice.
PO7	**Environment and Sustainability**: Understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate knowledge of sustainable development.
PO8	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.
PO9	**Individual and Teamwork**: Function effectively as an individual and as a member or leader in diverse teams and multidisciplinary settings.
PO10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and society at large, including writing effective reports and designing documentation and presentations.
PO11	**Project Management and Finance**: Demonstrate knowledge and understanding of engineering and management principles to manage projects in multidisciplinary environments.
PO12	**Life-long Learning**: Recognize the need for and have the preparation and ability to engage in independent and lifelong learning amidst technological changes.

Program Outcomes Keywords:

Program Outcomes	Keywords	
PO-1	Mathematics	PK-1
	Science	PK-2
	Engineering Fundamentals	PK-3
	Engineering problems	PK-4

PO-2	Research	PK-1
	Analyze	PK-2
	Natural sciences	PK-3
PO-3	Design	PK-1
	Public Health	PK-2
	Safety	PK-3
	Society	PK-4
	Environment	PK-5
PO-4	Research	PK-1
	Knowledge	PK-2
	Experiments	PK-3
	Analysis	PK-4
	Design	PK-5
PO-5	IT Tools	PK-1
	Engineering	PK-2
	Modern Techniques	PK-3
PO-6	Reasoning	PK-1
	Society	PK-2
	Safety	PK-3
	Health	PK-4
	Legal & cultural issues	PK-5
PO-7	Professional Engineering	PK-1
	Society	PK-2

	Environment	PK-3
	Knowledge	PK-4
	Development	PK-5
PO-8	Ethics	PK-1
	Responsibility	PK-2
	Professional Conduct.	PK-3
PO-9	Functional Individual	PK-1
	Diverse teams	PK-2
	Multi-disciplinary	PK-3
PO-10	Communicate	PK-1
	Society	PK-2
	Reports	PK-3
	Documentation	PK-4
	Presentation	PK-5
PO-11	Management	PK-1
	Team	PK-2
	Projects	PK-3
	Multi-disciplinary	PK-4
PO-12	Life-long learning	PK-1
	Technology change	PK-2
	Adaptability	PK-3

Program Specific Outcomes (PSOs):

PSOs	Program Specific Outcome	Description
PSO1	Engineering Design, Development and Manufacturing	Apply the knowledge gained in Mechanical Engineering for design and development and manufacture of engineering systems.
PSO2	Research Excellence and Problem-Solving	Apply the knowledge acquired to investigate research-oriented problems in mechanical engineering with due consideration for environmental and social impacts.
PSO3	Engineering Analysis Tools and Multidisciplinary Project Management	Use the engineering analysis and data management tools for effective management of multidisciplinary projects.

COURSE OUTCOMES

CO1:	Discuss the production planning processes to convert the raw material into a finished product.
CO2:	Prepare production planning activities chart for work-study to reduce the production time.
CO3:	Appraise the product planning and process planning used for improving the market sale of an existing product.
CO4:	Develop the production schedule for the given set of products.
CO5:	Explain inventory control activities to reduce inventory costs.

COURSE OUTCOMES KEYWORDS:

Course Outcomes (CO)	Keywords	Bloom's Levels
CO-1: Discuss the production planning processes to convert the raw material into a finished product.	Production Scheduling	Apply
	Work Study Techniques	
	Efficiency Optimization	
CO-2: Prepare production planning activities chart for work-study to reduce the production time.	Market Analysis	Analyze
	Product Lifecycle Management	
	Resource Allocation	
CO-3: Appraise the product planning and process planning used for improving the market sale of an existing product.	Workload Allocation	Analyze
	Time Management	
	Resource Optimization	
CO-4: Develop the production schedule for the given set of products.	Workload Allocation	Analyze
	Time Management	
	Resource Optimization	
CO-5: Explain inventory control activities to reduce inventory costs.	Material Requirements Planning (MRP II)	Evaluate
	Production Scheduling	
	ERP Integration	

CO-PO-PSO (MAPPING)

Course Outcome (CO)	Bloom's Taxonomy Levels	Program Outcomes (POs)	Program Specific Outcomes (PSOs)	Justification
Discuss the production planning processes to convert the raw material into a finished product.	**Apply**	PO1: Engineering Knowledge, PO2: Problem Analysis, PO3: Design/Development of Solutions PO4: Conduct Investigations of Complex Problems, PO9: Individual and Teamwork, PO11: Project Management and Finance PO12: Life-long Learning	PSO1: Engineering Design, Development and Manufacturing, PSO2: Research Excellence and Problem-Solving, PSO3: Engineering Analysis Tools and Multidisciplinary Project Management	**Apply** level, students implement production planning techniques and conduct work study analyses in manufacturing environments.
Prepare production planning activities chart for work-study to reduce the production time.	**Analyze**	PO1: Engineering Knowledge, PO2: Problem Analysis, PO3: Design/Development of Solutions PO4: Conduct Investigations of Complex Problems,	PSO1: Engineering Design, Development and Manufacturing, PSO2: Research Excellence and Problem-Solving, PSO3: Engineering Analysis Tools and	**Analyze** level, students evaluate market trends, resource constraints, and production processes to create effective and realistic product plans.

		PO9: Individual and Teamwork, PO11: Project Management and Finance PO12: Life-long Learning	Multidisciplinary Project Management	
Appraise the product planning and process planning used for improving the market sale of an existing product.	**Analyze**	PO1: Engineering Knowledge, PO2: Problem Analysis, PO3: Design/Development of Solutions PO4: Conduct Investigations of Complex Problems, PO9: Individual and Teamwork, PO11: Project Management and Finance PO12: Life-long Learning	PSO1: Engineering Design, Development and Manufacturing, PSO2: Research Excellence and Problem-Solving, PSO3: Engineering Analysis Tools and Multidisciplinary Project Management	**Analyze** level, students examine production data, identify bottlenecks, and adjust schedules to improve efficiency and ensure timely output.
Develop the production schedule for the given set of products.	**Analyze**	PO1: Engineering Knowledge, PO2: Problem Analysis, PO3: Design/Development of Solutions PO4: Conduct Investigations of Complex Problems,	PSO1: Engineering Design, Development and Manufacturing, PSO2: Research Excellence and Problem-Solving, PSO3: Engineering Analysis Tools and	**Analyze** level, students assess inventory data, identify trends or inefficiencies, and make informed decisions to enhance stock management and reduce waste.

		PO9: Individual and Teamwork, PO11: Project Management and Finance PO12: Life-long Learning	Multidisciplinary Project Management	
Explain inventory control activities to reduce inventory costs.	**Evaluate**	PO1: Engineering Knowledge, PO2: Problem Analysis, PO3: Design/Development of Solutions PO4: Conduct Investigations of Complex Problems, PO9: Individual and Teamwork, PO11: Project Management and Finance PO12: Life-long Learning	PSO1: Engineering Design, Development and Manufacturing, PSO2: Research Excellence and Problem-Solving, PSO3: Engineering Analysis Tools and Multidisciplinary Project Management	**Evaluate** level, students assess the performance and impact of these systems in streamlining operations and supporting strategic business objectives.

Course Outcome (CO)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Discuss the production planning processes to convert the raw material into a finished product.	3	2	2	2	0	0	0	0	1	0	1	1	2	1	1
CO2	Prepare production planning activities chart for work-study to reduce the production time.	3	3	2	1	0	0	0	0	1	0	1	1	2	1	1
CO3	Appraise the product planning and process planning used for improving the market sale of an existing product.	3	3	2	2	0	0	0	0	1	0	1	1	2	1	1
CO4	Develop the production schedule for the given set of products.	3	3	2	2	0	0	0	0	1	0	1	1	2	1	1
CO5	Explain inventory control activities to reduce inventory costs.	3	3	2	2	0	0	0	0	1	0	1	1	2	1	1

CO-PO Mapping Rubrics

Mapping Range	Mapping Levels
≤ 0	**0**
>0 to ≤ 1	**1**
>1 to ≤2	**2**
>2 to ≤3	**3**
* Anything >3	**3**

CO-POs-PSOs Mappings

CO1 with the mapping to **PO1-PO12** using the keywords, justification, and the rubric mapping levels:

CO1 Keywords	PO Keywords	Mapping Justification	Rubric Mapping Level
Production Scheduling Work Study Techniques Efficiency Optimization	PO1: Mathematics, Science, Engineering Fundamentals, Engineering Problems	These techniques require applying mathematics and engineering fundamentals to solve production problems and optimize processes.	3 (Strong)
Production Scheduling Work Study Techniques Efficiency Optimization	PO2: Research, Analyze, Natural Sciences	Involves analyzing workflows and applying systematic research to enhance efficiency, grounded in natural sciences.	2 (Moderate)
Production Scheduling Work Study Techniques Efficiency Optimization	PO3: Design, Public Health, Safety, Society, Environment	Involves basic design of production processes and workflows.	2 (Moderate)
Production Scheduling Work Study Techniques Efficiency Optimization	PO4: Research, Knowledge, Experiments, Analysis, Design	Investigative skills applied in mapping process sequences.	2 (Moderate)
Production Scheduling Work Study Techniques Efficiency Optimization	PO5: IT Tools, Engineering, Modern Techniques	Does not involve use of specific modern tools or software applications.	0 (No Relation)
Production Scheduling Work Study Techniques Efficiency Optimization	PO6: Reasoning, Society, Safety, Health, Legal & Cultural Issues	Does not explore engineering-society interaction.	0 (No Relation)

Production Scheduling Work Study Techniques Efficiency Optimization	PO7: Professional Engineering, Society, Environment, Knowledge, Development	Does not deal with environmental or sustainability considerations.	0 (No Relation)
Production Scheduling Work Study Techniques Efficiency Optimization	PO8: Ethics, Responsibility, Professional Conduct	Ethical or professional conduct is not directly involved in the scope of this CO.	0 (No Relation)
Production Scheduling Work Study Techniques Efficiency Optimization	PO9: Functional Individual, Diverse teams, Multi-disciplinary	Group discussions may occur, but limited focus on teamwork.	1 (Weak)
Production Scheduling Work Study Techniques Efficiency Optimization	PO10: Communicate, Society, Reports, Documentation, Presentation	No explicit reference to communication, reporting, or presentation skills.	0 (No Relation)
Production Scheduling Work Study Techniques Efficiency Optimization	PO11: Management, Team, Projects, Multi-disciplinary	Involves exposure to planning as a management concept.	1 (Weak)
Production Scheduling Work Study Techniques Efficiency Optimization	PO12: Life-long learning, Technology change, Adaptability	Encourages lifelong learning by exploring real-world production cases.	1 (Weak)

CO2 with the mapping to **PO1-PO12** using the keywords, justification, and the rubric mapping levels:

CO2 Keywords	PO1 Keywords	Mapping Justification	Rubric Mapping Level
Market Analysis Product Lifecycle Management Resource Allocation	PO1: Mathematics, Science, Engineering Fundamentals, Engineering Problems	Involves quantitative techniques and engineering fundamentals to solve engineering problems related to markets, products, and resource efficiency.	3 (Strong)
Market Analysis Product Lifecycle Management Resource Allocation	PO2: Research, Analyze, Natural Sciences	Requires the ability to analyze market data and trends, and apply research skills to support product decisions.	3 (Strong)
Market Analysis Product Lifecycle Management Resource Allocation	PO3: Design, Public Health, Safety, Society, Environment	Design and layout of activity charts.	2 (Moderate)
Market Analysis Product Lifecycle Management Resource Allocation	PO4: Research, Knowledge, Experiments, Analysis, Design	Some investigation into task timing and optimization.	1 (Weak)
Market Analysis Product Lifecycle Management Resource Allocation	PO5: IT Tools, Engineering, Modern Techniques	Focus is manual charting, not tool-based modeling.	0 (No Relation)

Market Analysis Product Lifecycle Management Resource Allocation	PO6: Reasoning, Society, Safety, Health, Legal & Cultural Issues	This CO2 lacks a direct link to societal, safety, or legal concerns.	0 (No Relation)
Market Analysis Product Lifecycle Management Resource Allocation	PO7: Professional Engineering, Society, Environment, Knowledge, Development	The CO2 does not emphasize professional engineering or development for society/environment.	0 (No Relation)
Market Analysis Product Lifecycle Management Resource Allocation	PO8: Ethics, Responsibility, Professional Conduct	Does not involve ethics or professional conduct.	0 (No Relation)
Market Analysis Product Lifecycle Management Resource Allocation	PO9: Functional Individual, Diverse teams, Multi-disciplinary	Collaborative work may occur but is minimal.	1 (Weak)
Market Analysis Product Lifecycle Management Resource Allocation	PO10: Communicate, Society, Reports, Documentation, Presentation	Does not highlight communication or reporting skills.	0 (No Relation)
Market Analysis Product Lifecycle Management Resource Allocation	PO11: Management, Team, Projects, Multi-disciplinary	Involves basic planning and resource organization.	1 (Weak)

Market Analysis Product Lifecycle Management Resource Allocation	PO12: Life-long learning, Technology change, Adaptability	Reinforces adaptability in industrial practices.	1 (Weak)

CO3 with the mapping to **PO1-PO12** using the keywords, justification, and the rubric mapping levels:

CO3 Keywords	PO1 Keywords	Mapping Justification	Rubric Mapping Level
Workload Allocation Time Management Resource Optimization	PO1: Mathematics, Science, Engineering Fundamentals, Engineering Problems	Workload allocation and resource optimization require an understanding of engineering fundamentals and the ability to apply them to solve complex engineering problems.	3 (Strong)
Workload Allocation Time Management Resource Optimization	PO2: Research, Analyze, Natural Sciences	The ability to analyze and allocate resources efficiently is based on research and data analysis, drawing from natural sciences.	3 (Strong)
Workload Allocation Time Management Resource Optimization	PO3: Design, Public Health, Safety, Society, Environment	Supports development of process improvements.	2 (Moderate)
Workload Allocation Time Management Resource Optimization	PO4: Research, Knowledge, Experiments, Analysis, Design	Evaluating and refining processes needs investigative approach.	2 (Moderate)
Workload Allocation Time Management	PO5: IT Tools, Engineering, Modern Techniques	Tool/software application not part of the CO.	0 (No Relation)

Resource Optimization			
Workload Allocation Time Management Resource Optimization	PO6: Reasoning, Society, Safety, Health, Legal & Cultural Issues	No direct link to societal, safety, or legal issues in this CO.	0 (No Relation)
Workload Allocation Time Management Resource Optimization	PO7: Professional Engineering, Society, Environment, Knowledge, Development	This CO does not directly relate to professional engineering or societal and environmental development.	0 (No Relation)
Workload Allocation Time Management Resource Optimization	PO8: Ethics, Responsibility, Professional Conduct	No mention of ethics or professional conduct in relation to the workload allocation and resource optimization process.	0 (No Relation)
Workload Allocation Time Management Resource Optimization	PO9: Functional Individual, Diverse teams, Multi-disciplinary	Discussions may include collaborative case studies.	1 (Weak)
Workload Allocation Time Management Resource Optimization	PO10: Communicate, Society, Reports, Documentation, Presentation	No emphasis on communication, reporting, or documentation skills.	0 (No Relation)
Workload Allocation Time Management Resource Optimization	PO11: Management, Team, Projects, Multi-disciplinary	Applies principles of strategic planning.	1 (Weak)
Workload Allocation Time Management Resource Optimization	PO12: Life-long learning, Technology change, Adaptability	Prepares students for lifelong learning in market dynamics.	1 (Weak)

CO4 with the mapping to **PO1-PO12** using the keywords, justification, and the rubric mapping levels:

CO4 Keywords	PO1 Keywords	Mapping Justification	Rubric Mapping Level
Workload Allocation Time Management Resource Optimization	PO1: Mathematics, Science, Engineering Fundamentals, Engineering Problems	Involves the application of management principles, scheduling theory, and optimization techniques to plan engineering tasks.	3 (Strong)
Workload Allocation Time Management Resource Optimization	PO2: Research, Analyze, Natural Sciences	Analyzes issues related to overloading, underutilization, and time conflicts to ensure smooth project execution.	3 (Strong)
Workload Allocation Time Management Resource Optimization	PO3: Design, Public Health, Safety, Society, Environment	Enables the creation of effective workload plans, time schedules, and resource allocation strategies that boost productivity.	2 (Moderate)
Workload Allocation Time Management Resource Optimization	PO4: Research, Knowledge, Experiments, Analysis, Design	Workload allocation and resource optimization require an understanding of engineering fundamentals and the ability to apply them to solve complex engineering problems.	2 (Moderate)
Workload Allocation Time Management Resource Optimization	PO5: IT Tools, Engineering, Modern Techniques	Software tools not included as part of this CO.	0 (No Relation)
Workload Allocation Time Management Resource Optimization	PO6: Reasoning, Society, Safety, Health, Legal & Cultural Issues	This CO does not specifically relate to design, public health, or society/environment in a direct manner.	0 (No Relation)

Workload Allocation Time Management Resource Optimization	PO7: Professional Engineering, Society, Environment, Knowledge, Development	This CO does not directly involve experiments, research, or knowledge development in the traditional sense.	0 (No Relation)
Workload Allocation Time Management Resource Optimization	PO8: Ethics, Responsibility, Professional Conduct	Ethical components are not part of scheduling task.	0 (No Relation)
Workload Allocation Time Management Resource Optimization	PO9: Functional Individual, Diverse teams, Multi-disciplinary	Some collaborative work may take place in case studies.	1 (Weak)
Workload Allocation Time Management Resource Optimization	PO10: Communicate, Society, Reports, Documentation, Presentation	This CO does not directly relate to professional engineering or societal and environmental development.	0 (No Relation)
Workload Allocation Time Management Resource Optimization	PO11: Management, Team, Projects, Multi-disciplinary	Involves understanding resource and time management.	1 (Weak)
Workload Allocation Time Management Resource Optimization	PO12: Life-long learning, Technology change, Adaptability	Supports independent learning in scheduling techniques.	1 (Weak)

CO5 with the mapping to **PO1-PO12** using the keywords, justification, and the rubric mapping levels:

CO5 Keywords	PO1 Keywords	Mapping Justification	Rubric Mapping Level

Material Requirements Planning (MRP II) Production Scheduling ERP Integration	PO1: Mathematics, Science, Engineering Fundamentals, Engineering Problems	Applies principles of supply chain, manufacturing systems, and operations management in MRP and ERP-based environments	3 (Strong)
Material Requirements Planning (MRP II) Production Scheduling ERP Integration	PO2: Research, Analyze, Natural Sciences	Involves analyzing production bottlenecks, lead times, and material flow issues using structured planning tools.	3 (Strong)
Material Requirements Planning (MRP II) Production Scheduling ERP Integration	PO3: Design, Public Health, Safety, Society, Environment	Supports the development of scheduling strategies, BOM structuring, and ERP workflows for efficient manufacturing.	2 (Moderate)
Material Requirements Planning (MRP II) Production Scheduling ERP Integration	PO4: Research, Knowledge, Experiments, Analysis, Design	Investigating methods to reduce waste or overstocking.	2 (Moderate)
Material Requirements Planning (MRP II) Production Scheduling ERP Integration	PO5: IT Tools, Engineering, Modern Techniques	This CO does not explicitly emphasize the use of IT tools or modern engineering techniques for innovation.	0 (No Relation)
Material Requirements Planning (MRP II) Production Scheduling ERP Integration	PO6: Reasoning, Society, Safety, Health, Legal & Cultural Issues	This CO does not focus on societal or safety/legal implications.	0 (No Relation)

Material Requirements Planning (MRP II) Production Scheduling ERP Integration	PO7: Professional Engineering, Society, Environment, Knowledge, Development	No direct relevance to professional engineering responsibilities or broader societal development.	0 (No Relation)
Material Requirements Planning (MRP II) Production Scheduling ERP Integration	PO8: Ethics, Responsibility, Professional Conduct	This CO does not touch on ethical considerations or professional conduct.	0 (No Relation)
Material Requirements Planning (MRP II) Production Scheduling ERP Integration	PO9: Functional Individual, Diverse teams, Multi-disciplinary	May involve teamwork on inventory case studies.	1 (Weak)
Material Requirements Planning (MRP II) Production Scheduling ERP Integration	PO10: Communicate, Society, Reports, Documentation, Presentation	Does not explicitly involve communication, documentation, or presentation skills.	0 (No Relation)
Material Requirements Planning (MRP II) Production Scheduling ERP Integration	PO11: Management, Team, Projects, Multi-disciplinary	Involves basic understanding of inventory/project control.	1 (Weak)
Material Requirements Planning (MRP II) Production Scheduling ERP Integration	PO12: Life-long learning, Technology change, Adaptability	Builds foundation for learning advanced inventory systems.	1 (Weak)

Mapping of CO1 to PO1, PO2, PO3, PO4, PO9, PO11, PO12

CO1	PO1		CO1	PO2		CO1	PO3
	PK1		CK1	PK1			PK1
CK1						CK1	
	PK2						PK2
CK2			CK2	PK2		CK2	
	PK3						PK3
CK3						CK3	
	PK4		CK3	PK3			PK4
							PK5

CO1	PO4		CO1	PO5		CO1	PO6
	PK1		CK1	PK1			PK1
CK1						CK1	
	PK2						PK2
CK2			CK2	PK2		CK2	
	PK3						PK3
CK3						CK3	
	PK4		CK3	PK3			PK4
	PK5						PK5

CO1	PO7		CO1	PO8		CO1	PO9
	PK1		CK1	PK1		CK1	PK1
CK1							
	PK2						
CK2			CK2	PK2		CK2	PK2
	PK3						
CK3							
	PK4		CK3	PK3		CK3	PK3
	PK5						

CO1	PO10		CO1	PO11		CO1	PO12
	PK1			PK1		CK1	PK1
CK1			CK1				
	PK2			PK2			
CK2			CK2			CK2	PK2
	PK3			PK3			
CK3			CK3				
	PK4			PK4		CK3	PK3
	PK5						

Mapping of CO2 to PO1, PO2, PO3, PO4, PO9, PO11, PO12

CO2	PO1		CO2	PO2		CO2	PO3
	PK1		CK1	PK1			PK1
CK1						CK1	
	PK2						PK2
CK2			CK2	PK2		CK2	
	PK3						PK3
CK3						CK3	
	PK4		CK3	PK3			PK4
							PK5

CO2	PO4		CO2	PO5		CO2	PO6
	PK1		CK1	PK1			PK1
CK1						CK1	
	PK2						PK2
CK2			CK2	PK2		CK2	
	PK3						PK3
CK3						CK3	
	PK4		CK3	PK3			PK4
	PK5						PK5

CO2	PO7		CO2	PO8		CO2	PO9
	PK1		CK1	PK1		CK1	PK1
CK1							
	PK2						
CK2			CK2	PK2		CK2	PK2
	PK3						
CK3							
	PK4		CK3	PK3		CK3	PK3
	PK5						

CO2	PO10		CO2	PO11		CO2	PO12
	PK1			PK1		CK1	PK1
CK1			CK1				
	PK2			PK2			
CK2			CK2			CK2	PK2
	PK3			PK3			
CK3			CK3				
	PK4			PK4		CK3	PK3
	PK5						

Mapping of CO3 to PO1, PO2, PO3, PO4, PO9, PO11, PO12

CO3	PO1		CO3	PO2		CO3	PO3
	PK1		CK1	PK1			PK1
CK1						CK1	
	PK2						PK2
CK2			CK2	PK2		CK2	
	PK3						PK3
CK3						CK3	
	PK4		CK3	PK3			PK4
							PK5

CO3	PO4		CO3	PO5		CO3	PO6
	PK1		CK1	PK1			PK1
CK1						CK1	
	PK2						PK2
CK2			CK2	PK2		CK2	
	PK3						PK3
CK3						CK3	
	PK4		CK3	PK3			PK4
	PK5						PK5

CO3	PO7		CO3	PO8		CO3	PO9
	PK1		CK1	PK1		CK1	PK1
CK1							
	PK2						
CK2			CK2	PK2		CK2	PK2
	PK3						
CK3							
	PK4		CK3	PK3		CK3	PK3
	PK5						

CO3	PO10		CO3	PO11		CO3	PO12
	PK1			PK1		CK1	PK1
CK1			CK1				
	PK2			PK2			
CK2			CK2			CK2	PK2
	PK3			PK3			
CK3			CK3				
	PK4			PK4		CK3	PK3
	PK5						

Mapping of CO4 to PO1, PO2, PO3, PO4, PO9, PO11, PO12

CO4	PO1		CO4	PO2		CO4	PO3
	PK1		CK1	PK1			PK1
CK1						CK1	
	PK2						PK2
CK2			CK2	PK2		CK2	
	PK3						PK3
CK3						CK3	
	PK4		CK3	PK3			PK4
							PK5

CO4	PO4		CO4	PO5		CO4	PO6
	PK1		CK1	PK1			PK1
CK1						CK1	
	PK2						PK2
CK2			CK2	PK2		CK2	
	PK3						PK3
CK3						CK3	
	PK4		CK3	PK3			PK4
	PK5						PK5

CO4	PO7		CO4	PO8		CO4	PO9
	PK1		CK1	PK1		CK1	PK1
CK1							
	PK2						
CK2			CK2	PK2		CK2	PK2
	PK3						
CK3							
	PK4		CK3	PK3		CK3	PK3
	PK5						

CO4	PO10		CO4	PO11		CO4	PO12
	PK1			PK1		CK1	PK1
CK1			CK1				
	PK2			PK2			
CK2			CK2			CK2	PK2
	PK3			PK3			
CK3			CK3				
	PK4			PK4		CK3	PK3
	PK5						

Mapping of CO5 to PO1, PO2, PO3, PO4, PO9, PO11, PO12

CO5	PO1		CO5	PO2		CO5	PO3
	PK1		CK1	PK1			PK1
CK1						CK1	
	PK2						PK2
CK2			CK2	PK2		CK2	
	PK3						PK3
CK3						CK3	
	PK4		CK3	PK3			PK4
							PK5

CO5	PO4		CO5	PO5		CO5	PO6
	PK1		CK1	PK1			PK1
CK1						CK1	
	PK2						PK2
CK2			CK2	PK2		CK2	
	PK3						PK3
CK3						CK3	
	PK4		CK3	PK3			PK4
	PK5						PK5

CO5	PO7		CO5	PO8		CO5	PO9
	PK1		CK1	PK1		CK1	PK1
CK1							
	PK2						
CK2			CK2	PK2		CK2	PK2
	PK3						
CK3							
	PK4		CK3	PK3		CK3	PK3
	PK5						

CO5	PO10		CO5	PO11		CO5	PO12
	PK1			PK1		CK1	PK1
CK1			CK1				
	PK2			PK2			
CK2			CK2			CK2	PK2
	PK3			PK3			
CK3			CK3				
	PK4			PK4		CK3	PK3
	PK5						

PROGRAM ARTICULATION MATRIX

Program Articulation Matrix (PAM) is formed by the strength of correlation of COs with POs and PSOs. The strength of co-relation is indicated as 3 for substantial (high), 2 for moderate (medium) correlation, and 1 for slight (low) correlation.

If Course Outcomes are attained, the POs correlated to these COs are also attained.

Calculations:

Subject: ME8793 PROCESS PLANNING AND COST ESTIMATION

Table 9. Calculation for CO-PO Attainment Level

Course code / Name of the course	CO'S	AW	PO'S												PSO		
			1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
ME8793 / PROCESS PLANNING AND COST ESTIMATION	CO1	3	3	2	2	2					1		1	1	2	1	1
	CO2	3	3	3	2	1					1		1	1	2	1	1
	CO3	3	3	3	2	2					1		1	1	2	1	1
	CO4	3	3	3	2	2					1		1	1	2	1	1
	CO5	3	3	3	2	2					1		1	1	2	1	1
Sum of POs		15	15	14	10	9	0	0	0	0	5	0	5	5	10	5	0
			1.00	0.93	0.67	0.60	0.00	0.00	0.00	0.00	0.33	0.00	0.33	0.33	0.67	0.33	0.33
CO-PO Mapping Attainment Level			3	3	3	3	0	0	0	0	2	0	2	2	3	2	2

Sample Calculation for PO2 Attainment Level:

$$\text{PO2 Value} = \frac{\text{Mapping of [(CO1PO2) + (CO2PO2) + (CO3PO2) + (CO4PO2) + (CO5PO2)]}}{\text{(5 X 3)}}$$

$$\text{PO2 Value} = \frac{[(2) + (3) + (3) + (3) + (3)]}{(15)} = \frac{14}{15} = 0.93$$

CO-PO Attainment Levels for PAM

Levels	Level - 1	Level - 2	Level - 3	PO2
Correlation	Low	Medium	High	The Attainment Level for the corresponding PO2 value (0.93) = 3
Range	> 0 to < 0.3	≥ 0.3 to < 0.6	≥ 0.6	
Value	1	2	3	

PROGRAM ATRICULATION MATRIX

Table 10. Program Articulation Matrix of 17 Regulation Courses (Batch 2019-2023)

S. No	Course code	Name of the course	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3
1	HS8151	Communicative English	2	3	3	3	2	3	3	3	2	3	2	3			
2	MA8151	Engineering Mathematics - I	3	3	2	2					3		3	3		2	
3	PH8151	Engineering Physics	3	3	2	2	3	2						1		1	
4	CY8151	Engineering Chemistry	3	2	2	1		2	2					1		2	
5	GE8151	Problem Solving and Python Programming	3	3	3	3	3						2	1		2	3
6	GE8152	Engineering Graphics	3	2	3		3					3		3	3		2
7	GE8161	Problem Solving and Python Programming Laboratory	3	3	3	3	3						3	1		2	3
8	BS8161	Physics and Chemistry Laboratory	3	3	3	2	2									1	

9	HS8251	Technical English	3	3	3	3	3	3	3	3	3	3	3	3			
10	MA8251	Engineering Mathematics - II	3	3	2	2	2				3		3	3		2	
11	PH8251	Materials Science	3	3	2	2	3	2	1					1		2	
12	BE8253	Basic Electrical, Electronics and Instrumentation Engineering	3	3	2					2				3	3	2	
13	GE8291	Environmental Science and Engineering	3	2	1	1		3	3					3			
14	GE8292	Engineering Mechanics	3	3	3	2	3							3	3	2	3
15	GE8261	Engineering Practices Laboratory	3	3			2	2	2					3	3	2	2
16	BE8261	Basic Electrical, Electronics and Instrumentation Engineering Laboratory	3	3	3	2	2			3	3				3	2	2
17	MA8353	Transforms and Partial Differential Equations	3	3	2	2					3			3		2	2

18	ME8391	Engineering Thermodynamics	3	3	3	2		1			2		1	3	3	3	2
19	CE8394	Fluid Mechanics and Machinery	3	3	2	3								3	3	3	3
20	ME8351	Manufacturing Technology – I	3		3			3	3	2	2			2	2	3	
21	EE8353	Electrical Drives and Controls	3	2	2						2			2	3	2	2
22	ME8361	Manufacturing Technology Laboratory – I	3						2		3			2	2	3	
23	ME8381	Computer Aided Machine Drawing	2	3			3				3	3		3	3	3	3
24	EE8361	Electrical Engineering Laboratory	3	2	3			2						3	2	2	2
25	HS8381	Interpersonal Skills / Listening & Speaking		2	3	3		3	3	3	3	3	3	3			
26	MA8452	Statistics and Numerical Methods	3	3	2	2					3			3		2	3
27	ME8492	Kinematics of Machinery	3	3	3									3	3	2	2

28	ME8451	Manufacturing Technology– II	3	3	3	2	2							3	3	3	2
29	ME8491	Engineering Metallurgy	3	2	3	2	1	1	1	1				3	3	2	2
30	CE8395	Strength of Materials for Mechanical Engineers	3	3	3	3								3	3	3	2
31	ME8493	Thermal Engineering– I	3	3	2	2								2	3	2	2
32	ME8462	Manufacturing Technology Laboratory–II	3				3		2		3			2	2	3	3
33	CE8381	Strength of Materials and Fluid Mechanics and Machinery Laboratory	3	3	2									3	3	3	3
34	HS8461	Advanced Reading and Writing						2	2	3	3	3	3	3		2	
35	ME8595	Thermal Engineering- II	3	3	3	3					2			2	3	3	2
36	ME8593	Design of Machine Elements	3	3	3					2	2			3	3	3	3

37	ME8501	Metrology and Measurements	3	3	3	3					2			2	3	3	2
38	ME8594	Dynamics of Machines	3	3	3		3			2				2	3	2	2
39	OAT552	Internal Combustion Engines	3	3	2	2								2	3	2	3
40	ME8511	Kinematics and Dynamics Laboratory	3	3	2	3	2						2	2	3	3	2
41	ME8512	Thermal Engineering Laboratory	3	3	2	2					2			2	3	2	2
42	ME8513	Metrology and Measurements Laboratory		3	3	3		3	3		2	3	3		3	3	3
43	ME8651	Design of Transmission Systems	3	3	3	2					2			2	3	3	3
44	ME8691	Computer Aided Design and Manufacturing	3	3	3	3	3		2		2			2	3	3	3
45	ME8693	Heat and Mass Transfer	3	3	3	3								3	3	3	2
46	ME8692	Finite Element Analysis	3	3	3	3					2			3	3	2	3

47	ME8694	Hydraulics and Pneumatics	3	2	2	2								2	3	2	2
48	ME8681	CAD / CAM Laboratory	3	3	3	3	3				3			2	3	3	2
49	ME8682	Design and Fabrication Project	3	3	3	3	3			3	3	3	3	3	3	3	3
50	HS8581	Professional Communication						2	2	3	3	3	3	3		2	
51	PR8592	Welding Technology	2	2	3	3					2			2	3	2	2
52	ME8792	Power Plant Engineering	3	2	2	2		2	3			2		2	3	3	2
53	ME8793	Process Planning and Cost Estimation	3	3	3	3					2		2	2	3	2	2
54	ME8791	Mechatronics	3	3	2	3		3						3	3	3	3
55	ME8711	Simulation and Analysis Laboratory	3	3	3	3	3							3	3	3	3
56	ME8781	Mechatronics Laboratory	3	3	3	3	3		1		2			2	2	3	3

57	ME8712	Technical Seminar	3	2	2	2				3	2	3		3			
58	OML751	Testing of Materials	3	2	2		2	2						3	3	3	2
59	ME8073	Unconventional Machining Processes	3		2		2		2		2	2		2	3	3	2
60	ME8097	Non-Destructive Testing and Evaluation	3	3	3	3			3	3				3	3	3	2
61	MG8591	Principles of Management			2	2		3	3	3	3	3	3	3		2	
62	ME8811	Project Work	3	3	3	2	2	2	2	2	3	2	2	3	3	1	2
63	IE8693	Production Planning and Control	3	3	1		3		1				1		2	2	2
Sum of Mapped PO's			**171**	**156**	**145**	**110**	**69**	**46**	**49**	**41**	**82**	**39**	**42**	**147**	**129**	**137**	**110**
Total Subject Mapped (Number of Non zero Courses)			**58**	**56**	**57**	**45**	**27**	**20**	**22**	**16**	**33**	**14**	**17**	**59**	**45**	**57**	**46**
PO Attainment Value			**2.948**	**2.786**	**2.544**	**2.444**	**2.556**	**2.300**	**2.227**	**2.563**	**2.485**	**2.786**	**2.471**	**2.492**	**2.867**	**2.404**	**2.391**

TARGET PO AND PSO VALUES:

Table 11. Target POs and PSOs

PROGRAM OUTCOMES (POs)												PSOs		
PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO 1	PSO 2	PSO 3
2.948	2.786	2.544	2.444	2.556	2.300	2.227	2.563	2.485	2.786	2.471	2.492	2.867	2.404	2.391

18 PO and PSO ASSESSMENT PROCESS

DIRECT ASSESSMENT TOOLS (THEORY COURSES) WITH ATTAINMENT CALCULATION:

Table 12. Direct Assessment Tool's (Theory Courses) with Attainment Calculation

Assessment Tools	Assessment Frequency	Assessed by	Reviewed by	Attainment Calculation
Internal Assessment Test (IAT)	Three times in a Semester	Course Coordinator	Module Coordinator	❖ **Internal Assessment Test-I** Total Marks: 50 (Units: 1.5) CO1 = 26; CO2 = 24. ❖ **Internal Assessment Test-II** Total Marks: 50 (Units: 1.5) CO2 = 24; CO3 = 26. ❖ **Internal Assessment Test-III**

				Total Marks: 50 (Units: 2) CO4 = 24; CO5 = 26.
Assignments	Five times in a Semester	Course Coordinator	Course Faculty	❖ **Assignments** Total Marks: 50 CO1 = 10; CO2 = 10; CO3 = 10; CO4 = 10; CO5 = 10.
Model Test (MT)	Once in a Semester	Course Coordinator	Module Coordinator	❖ **Model Test** Total Marks: 100 (Units: 5) CO1 = (17+15*); CO2 = 17; CO3 = 17; CO4 = 17; CO5 = 17. *15 Marks assign to anyone CO's depends on Course Coordinator.
Semester End Exam (SEE)	Once in a Semester	Anna University	-	❖ **Semester End Exam** Total Marks: 100 CO1 = 20; CO2 = 20; CO3 = 20; CO4 = 20; CO5 = 20.

Attainment Calculation (Theory Courses):

- CO1 = CO1A + CO1B
  - CO1A = IAT1 (26) + Assignment (10) + MT (17+15*) = 68 Marks = Convert to 100 Marks = Convert to 60 Marks
  - CO1B = SEE (20) = Convert to 40 Marks

- CO2 = CO2A + CO2B
  - CO2A = IAT1 (24) + IAT2 (24) + Assignment (10) + MT (17) = 75 Marks = Convert to 100 Marks = Convert to 60 Marks
  - CO2B = SEE (20) = Convert to 40 Marks
- CO3 = CO3A + CO3B
  - CO3A = IAT2 (26) + Assignment (10) + MT (17) = 53 Marks = Convert to 100 Marks = Convert to 60 Marks
  - CO3B = SEE (20) = Convert to 40 Marks
- CO4 = CO4A + CO4B
  - CO4A = IAT3 (24) + Assignment (10) + MT (17) = 51 Marks = Convert to 100 Marks = Convert to 60 Marks
  - CO4B = SEE (20) = Convert to 40 Marks
- CO5 = CO5A + CO5B
  - CO5A = IAT3 (26) + Assignment (10) + MT (17) = 53 Marks = Convert to 100 Marks = Convert to 60 Marks
  - CO1B = SEE (20) = Convert to 40 Marks

Attainment Levels:

1) **Tough Course**

   Level 3: HIGH, if Marks > 65.5 Marks

   Level 2: MEDIUM, if 50 ≤ Marks ≤ 65.5 Marks

   Level 1: LOW, if Marks < 50 Marks

2) **Moderate Course**

   Level 3: HIGH, if Marks > 70.5 Marks

   Level 2: MEDIUM, if 55 ≤ Marks ≤ 70.5 Marks

Level 1: LOW, if Marks < 55 Marks

3) **Easy Course**

Level 3: HIGH, if Marks > 75.5 Marks

Level 2: MEDIUM, if 60 ≤ Marks ≤ 75.5 Marks

Level 1: LOW, if Marks < 60 Marks

DIRECT ASSESSMENT TOOLS (LABORATORY COURSES) WITH ATTAINMENT CALCULATION:

Table 13. Direct Assessment Tool's (Laboratory Courses) with Attainment Calculation

Assessment Tools	Assessment Frequency	Assessed by	Reviewed by	Attainment Calculation
Internal Assessment Test (IAT) Lab	Two times in a Semester	Course Coordinator	Module Coordinator	❖ **Internal Assessment Test-I (IAT-1)** Total Marks: 25 [Day to Day Evaluation = 10 Marks Lab Marks = 10 Marks Viva Voice = 5 Marks] CO1 = 5; CO2 = 5; CO3 = 5; CO4 = 5; CO5 = 5. ❖ **Internal Assessment Test-2 (IAT-2)** Total Marks: 25 [Day to Day Evaluation = 10 Marks Lab Marks = 10 Marks Viva Voice = 5 Marks]

				CO1 = 5; CO2 = 5; CO3 = 5; CO4 = 5; CO5 = 5.
Semester End Lab Exam (SELE)	Once in a Semester	Anna University	-	❖ **Semester End Lab Exam** Total Marks: 100 CO1 = 20; CO2 = 20; CO3 = 20; CO4 = 20; CO5 = 20.

Attainment Calculation (Laboratory Courses):

- CO1 = CO1A + CO1B
  - CO1A = IAT-1 (5) + IAT-2 (5) = 10 Marks = Convert to 40 Marks
  - CO1B = SELE (20) = Convert to 60 Marks
- CO2 = CO2A + CO2B
  - CO2A = IAT-1 (5) + IAT-2 (5) = 10 Marks = Convert to 40 Marks
  - CO2B = SELE (20) = Convert to 60 Marks
- CO3 = CO3A + CO3B
  - CO3A = IAT-1 (5) + IAT-2 (5) = 10 Marks = Convert to 40 Marks
  - CO3B = SELE (20) = Convert to 60 Marks
- CO4 = CO4A + CO4B
  - CO4A = IAT-1 (5) + IAT-2 (5) = 10 Marks = Convert to 40 Marks
  - CO4B = SELE (20) = Convert to 60 Marks
- CO5 = CO5A + CO5B
  - CO5A = IAT-1 (5) + IAT-2 (5) = 10 Marks = Convert to 40 Marks
  - CO5B = SELE (20) = Convert to 60 Marks

Attainment Levels:

Level 3: HIGH, if Marks ≥ 80Marks

Level 2: MEDIUM, if 80 < Marks ≤70 Marks

Level 1: LOW, if 70 < Marks ≤ 60 Marks

DIRECT ASSESSMENT TOOLS (MINI / MAJOR PROJECT COURSES) WITH CALCULATION:

Table 14. Direct Assessment Tool's (Mini / Major Project Courses) with Attainment Calculation

Assessment Tools	Assessment Frequency	Assessed by	Reviewed by	Attainment Calculation
Review	Three times in a Semester	Course Coordinator	Module Coordinator	❖ **Review-1 (R-1)** Total Marks: 15 CO1 = 3; CO2 = 3; CO3 = 3; CO4 = 3; CO5 = 3. ❖ **Review-2 (R-2)** Total Marks: 15 CO1 = 3; CO2 = 3; CO3 = 3; CO4 = 3; CO5 = 3. ❖ **Review-3 (R-3)** Total Marks: 20 CO1 = 4; CO2 = 4; CO3 = 4; CO4 = 4; CO5 = 4.
Semester End Project (SEP)	Once in a Semester	Anna University	-	❖ **Semester End Project (SEP)** Total Marks: 100 CO1 = 20; CO2 = 20; CO3 = 20; CO4 = 20; CO5 = 20.

Attainment Calculation (Project Work):

- CO1 = CO1A + CO1B
  - CO1A = R-1 (3) + R-2 (3) + R-3 (4) = 10 Marks = Convert to 40 Marks
  - CO1B = SEP (20) = Convert to 60 Marks
- CO2 = CO2A + CO2B
  - CO2A = R-1 (3) + R-2 (3) + R-3 (4) = 10 Marks = Convert to 40 Marks
  - CO2B = SEP (20) = Convert to 60 Marks
- CO3 = CO3A + CO3B
  - CO3A = R-1 (3) + R-2 (3) + R-3 (4) = 10 Marks = Convert to 40 Marks
  - CO3B = SEP (20) = Convert to 60 Marks
- CO4 = CO4A + CO4B
  - CO4A = R-1 (3) + R-2 (3) + R-3 (4) = 10 Marks = Convert to 40 Marks
  - CO4B = SEP (20) = Convert to 60 Marks
- CO5 = CO5A + CO5B
  - CO5A = R-1 (3) + R-2 (3) + R-3 (4) = 10 Marks = Convert to 40 Marks
  - CO5B = SEP (20) = Convert to 60 Marks

Attainment Levels:

Level 3: HIGH, if Marks $\geq$ 90 Marks

Level 2: MEDIUM, if 90 < Marks $\leq$ 80 Marks

Level 1: LOW, if 80 < Marks $\leq$ 70 Marks

DIRECT ASSESSMENT TOOLS (Course Exit Survey) WITH CALCULATION:

Table 15. Indirect Assessment Tool's with Attainment Calculation

Assessment Tools	Assessment Frequency	Assessed by	Reviewed by	Attainment Calculation
Course Exit Survey	Each Course one time in a Semester	Course Coordinator	Module Coordinator	❖ **Survey is made with a Questionnaire prepared based on the COs. Five Question addresses five COs.** Strongly Agrees = 3, Mediumly Agrees = 2, Lowly Agrees = 1

Indirect CO Attainment Calculation:

- CO1 = [CO1A + CO1B+ CO1C] / Number of Students
  - CO1A = Number of Students Strongly Agrees x (3)
  - CO1B = Number of Students Mediumly Agrees x (2)
  - COIC = Number of Students Lowly Agrees x (1)
- CO2 = [CO2A + CO2B+ CO2C] / Number of Students
  - CO2A = Number of Students Strongly Agrees x (3)
  - CO2B = Number of Students Mediumly Agrees x (2)
  - CO2C = Number of Students Lowly Agrees x (1)
- CO3 = [CO3A + CO3B+ CO3C] / Number of Students
  - CO3A = Number of Students Strongly Agrees x (3)
  - CO3B = Number of Students Mediumly Agrees x (2)
  - CO3C = Number of Students Lowly Agrees x (1)

- CO4 = [CO4A + CO4B+ CO4C] / Number of Students
  - CO4A = Number of Students Strongly Agrees x (3)
  - CO4B = Number of Students Mediumly Agrees x (2)
  - CO4C = Number of Students Lowly Agrees x (1)
- CO5 = [CO5A + CO5B+ CO5C] / Number of Students
  - CO5A = Number of Students Strongly Agrees x (3)
  - CO5B = Number of Students Mediumly Agrees x (2)
  - CO5C = Number of Students Lowly Agrees x (1)

COURSE OUTCOMES ASSESSMENT CALCULATION

Table 16. Course Outcomes with Attainment Calculation

CO1 = [CO1 of Direct Assessment] X 0.8 + [CO1 of Indirect Assessment] X 0.2

CO2 = [CO2 of Direct Assessment] X 0.8 + [CO2 of Indirect Assessment] X 0.2

CO3 = [CO3 of Direct Assessment] X 0.8 + [CO3 of Indirect Assessment] X 0.2

CO4 = [CO4 of Direct Assessment] X 0.8 + [CO4 of Indirect Assessment] X 0.2

CO5 = [CO5 of Direct Assessment] X 0.8 + [CO5 of Indirect Assessment] X 0.2

$$\text{COURSE OUTCOME} = \frac{(CO1 + CO2 + CO3 + CO4 + CO5)}{5}$$

INDIRECT PO ASSESSMENT TOOLS:

Assessment Tools	Assessment Frequency	Assessed by	Reviewed by	Attainment Calculation
Graduate Survey	Yearly once	Coordinators, PAC	PAC, DAC	❖ Fifteen questions related to professional, technical, and social experience in the program to practice the following twelve program outcomes are asked to the Graduate at the end of the semester through Graduate Feedback Survey Form. ❖ Feedback is measured in scale of 1 to 3. Strongly Agrees = 3, Moderately Agrees = 2, Lowly Agrees = 1 ❖ Fifteen questions are mapped with Program Outcome and Program Specific Outcome and based on that attainment is made.
Parent Survey	Yearly once	Coordinators, PAC	PAC, DAC	❖ Twelve questions related to expected on Institute are asked to the parents at the end of the semester through Parent Feedback Survey Form. ❖ Feedback is measured in scale of 1 to 3. Strongly Agrees = 3, Moderately Agrees = 2, Lowly Agrees = 1 ❖ Twelve questions are mapped with Program Outcome and Program Specific Outcome and based on that attainment is made.
Employer Survey	Yearly once	Coordinators, PAC	PAC, DAC	❖ Six questions related to curriculum are asked to the Employer through Employer Feedback Survey Form via Google form.

				❖ Feedback is measured in scale of 1 to 3. Strongly Agrees = 3, Moderately Agrees = 2, Lowly Agrees = 1 ❖ Six questions are mapped with Program Outcome and Program Specific Outcome and based on that attainment is made.
Alumni Survey	Yearly once after graduation	Coordinators, PAC	PAC, DAC	❖ Fifteen questions related to Program Outcome are asked to the Alumni through Alumni Feedback Survey Form via Google form. ❖ Feedback is measured in scale of 1 to 3. Strongly Agrees = 3, Moderately Agrees = 2, Lowly Agrees = 1. ❖ Fifteen questions are mapped with Program Outcome and Program Specific Outcome and based on that attainment is made.

Indirect PO Attainment Calculation

- PO1 = [PO1A + PO1B+ PO1C] / (Number of Graduates or Parents or Employer or Alumni)
  - PO1A = Number of Students Strongly Agrees x (3)
  - PO1B = Number of Students Mediumly Agrees x (2)
  - POIC = Number of Students Lowly Agrees x (1)
- PO2 = [PO2A + PO2B+ PO2C] / (Number of Graduates or Parents or Employer or Alumni)
  - PO2A = Number of Students Strongly Agrees x (3)
  - PO2B = Number of Students Mediumly Agrees x (2)
  - PO2C = Number of Students Lowly Agrees x (1)
- PO3 = [PO3A + PO3B+ PO3C] / (Number of Graduates or Parents or Employer or Alumni)

- PO3A = Number of Students Strongly Agrees x (3)
- PO3B = Number of Students Mediumly Agrees x (2)
- PO3C = Number of Students Lowly Agrees x (1)

- PO4 = [PO4A + PO4B+ PO4C] / (Number of Graduates or Parents or Employer or Alumni)
  - PO4A = Number of Students Strongly Agrees x (3)
  - PO4B = Number of Students Mediumly Agrees x (2)
  - PO4C = Number of Students Lowly Agrees x (1)
- PO5 = [PO5A + PO5B+ PO5C] / (Number of Graduates or Parents or Employer or Alumni)
  - PO5A = Number of Students Strongly Agrees x (3)
  - PO5B = Number of Students Mediumly Agrees x (2)
  - PO5C = Number of Students Lowly Agrees x (1)
- PO6 = [PO6A + PO6B+ PO6C] / (Number of Graduates or Parents or Employer or Alumni)
  - PO1A = Number of Students Strongly Agrees x (3)
  - PO1B = Number of Students Mediumly Agrees x (2)
  - POIC = Number of Students Lowly Agrees x (1)
- PO7 = [PO7A + PO7B+ PO7C] / (Number of Graduates or Parents or Employer or Alumni)
  - PO7A = Number of Students Strongly Agrees x (3)
  - PO7B = Number of Students Mediumly Agrees x (2)
  - PO7C = Number of Students Lowly Agrees x (1)
- PO8 = [PO8A + PO8B+ PO8C] / (Number of Graduates or Parents or Employer or Alumni)

- PO8A = Number of Students Strongly Agrees x (3)
- PO8B = Number of Students Mediumly Agrees x (2)
- PO8C = Number of Students Lowly Agrees x (1)

- PO9 = [PO9A + PO9B+ PO9C] / (Number of Graduates or Parents or Employer or Alumni)
  - PO9A = Number of Students Strongly Agrees x (3)
  - PO9B = Number of Students Mediumly Agrees x (2)
  - PO9C = Number of Students Lowly Agrees x (1)
- PO10 = [PO10A + PO10B+ PO10C] / (Number of Graduates or Parents or Employer or Alumni)
  - PO10A = Number of Students Strongly Agrees x (3)
  - PO10B = Number of Students Mediumly Agrees x (2)
  - POI0C = Number of Students Lowly Agrees x (1)
- PO11 = [PO11A + PO11B+ PO11C] / (Number of Graduates or Parents or Employer or Alumni)
  - PO11A = Number of Students Strongly Agrees x (3)
  - PO11B = Number of Students Mediumly Agrees x (2)
  - POI1C = Number of Students Lowly Agrees x (1)
- PO12 = [PO12A + PO12B+ PO12C] / (Number of Graduates or Parents or Employer or Alumni)
  - PO1A = Number of Students Strongly Agrees x (3)
  - PO1B = Number of Students Mediumly Agrees x (2)
  - POIC = Number of Students Lowly Agrees x (1)
- PSO1 = [PSO1A + PSO1B+ PSO1C] / (Number of Graduates or Parents or Employer or Alumni)

- PSO1A = Number of Students Strongly Agrees x (3)
- PSO1B = Number of Students Mediumly Agrees x (2)
- PSOIC = Number of Students Lowly Agrees x (1)

- PSO2 = [PSO2A + PSO2B+ PSO2C] / (Number of Graduates or Parents or Employer or Alumni)
  - PSO2A = Number of Students Strongly Agrees x (3)
  - PSO2B = Number of Students Mediumly Agrees x (2)
  - PSO2C = Number of Students Lowly Agrees x (1)
- PSO3 = [PSO3A + PSO3B+ PSO3C] / (Number of Graduates or Parents or Employer or Alumni)
  - PSO3A = Number of Students Strongly Agrees x (3)
  - PSO3B = Number of Students Mediumly Agrees x (2)
  - PSO3C = Number of Students Lowly Agrees x (1)

Evaluation of POs and PSOs = 80 % of Direct Assessment + 20 % of Indirect Assessment

The detailed procedure for the PO Attainment Process for different samples (Theory Course, Laboratory, Seminar, Industry Oriented Mini Project, Technical Seminar and Major Project are given in the following section.

20. THE PO AND PSO ATTAINMENT CALCULATIONS ARE DONE FOR THE FOLLOWING SAMPLE COURSES.

INTERNAL ASSESSMENT TEST-1:

STELLA MARY'S COLLEGE OF ENGINEERING

Aruthengavillai, Kallukatti Junction, Azhikal (PO), Kanyakumari District-629202

DEPARTMENT OF MECHANICAL ENGINEERING

COURSE OUTCOME (INTERNAL EXAM -I)

COURSE CODE / NAME : ME8793/Process Planning and Cost Estimation

COURSE HANDLED : Mr. I. P. Rakhesh

2022 -2023 (Odd)
S7

SL. NO.	Reg. NO.	Student Name	PART-A					PART-B& C				TOTAL		TOTAL	TOTAL
			CO 1	CO 1	CO 1	CO 2	CO 2	CO 1	CO 1	CO 2	C0 2	CO 1	CO 2		
			2	2	2	2	2	10	10	10	10	26	24	50	100
1	963519114001	AARON C	2	0	2	1	1	3	3	4	4	10	10	20	40
2	963519114002	ABILASH V A	2	2	2	1	1	1	4	3	0	11	5	16	34
3	963519114003	ABISHEK N T	2	2	2	2	2	10	10	10	10	26	24	50	100
4	963519114004	ABISHEK V L	2	2	2	2	2	10	10	10	10	26	24	50	100
5	963519114005	AJIN KUMAR R	2	2	2	2	2	10	10	10	10	26	24	50	100
6	963519114006	AKASH M V	2	2	2	2	2	10	10	10	10	26	24	50	100
7	963519114007	AKASH R	2	2	2	2	2	10	10	10	7	26	21	47	94
8	963519114008	AKASH R	2	2	2	2	2	10	10	10	10	26	24	50	100
9	963519114009	AKSHAY PRIAN M C	2	2	2	2	2	10	10	10	10	26	24	50	100
10	963519114010	ANUSH N	2	2	2	2	2	10	10	10	10	26	24	50	100
11	963519114011	AROCKIA SOBINSON D	2	2	2	2	2	10	10	10	8	26	22	48	96
12	963519114013	BHARATH J	2	2	2	2	2	10	10	10	10	26	24	50	100
13	963519114014	DANI MAMOOTTIL SHAJI	2	2	2	2	2	10	10	10	10	26	24	50	100
14	963519114016	DHARMALINGAM A	2	2	2	1	1	1	4	3	0	11	5	16	34
15	963519114017	INFANT JEENU B	2	2	2	2	2	10	10	10	10	26	24	50	100

16	963519114019	JENEETH SIJIN S	2	2	2	2	2	10	10	10	4	26	18	44	88
17	963519114020	LAKSHMANAN S	2	2	2	2	2	10	10	8	10	26	22	48	96
18	963519114021	LERIN DEONI S	2	2	2	2	2	10	8	10	10	24	24	48	96
19	963519114023	NAVI SIJU ANTONY T	2	2	2	2	2	10	10	10	10	26	24	50	100
20	963519114024	NIKESH RAJ M	2	2	2	2	2	10	10	10	10	26	24	50	100
21	963519114025	NISHANTH V	2	2	2	2	2	7	2	10	10	15	24	39	78
22	963519114026	RAVEEN R	2	2	2	2	2	10	10	10	10	26	24	50	100
23	963519114027	RENY R	2	2	2	1	1	1	4	3	0	11	5	16	34
24	963519114028	RISHIKESH P	2	2	2	2	2	10	4	10	10	20	24	44	88
25	963519114029	ROSHAN RAJAN M	2	2	2	2	2	10	10	2	10	26	16	42	84
26	963519114030	SAM STEPHEN G	2	2	2	2	2	10	10	10	10	26	24	50	100
27	963519114031	SANJAY BHARATHI M	2	2	2	2	2	10	10	10	10	26	24	50	100
28	963519114032	SANTHOSH M	2	2	2	2	2	2	7	9	9	15	22	37	74
29	963519114033	SARTHIKA M	2	2	2	2	2	10	10	10	10	26	24	50	100
30	963519114035	SHIKIL SHAN XAVIEO X	2	2	2	2	2	2	10	10	10	18	24	42	84
31	963519114036	SHYJU R	2	2	2	2	2	8	3	10	10	17	24	41	82
32	963519114038	SOMU C	2	2	2	2	2	10	10	10	10	26	24	50	100
33	963519114039	SUBITH M	2	0	2	1	1	3	3	4	4	10	10	20	40
34	963519114040	SURESH A	2	2	2	1	1	1	4	3	0	11	5	16	34
35	963519114041	VIGNESH N	2	2	2	2	2	10	6	10	10	22	24	46	92
36	963519114301	AJAY JENIFER M	2	2	2	2	2	10	10	10	10	26	24	50	100
37	963519114302	AJIN A	2	2	2	2	2	10	10	10	10	26	24	50	100
38	963519114303	ASTIL REJU A	2	2	2	2	2	10	10	10	9	26	23	49	97
39	963519114304	BABIN RAJ S	2	2	2	2	2	10	3	10	10	19	24	43	85
40	963519114305	BRYLIN JINO E	2	2	2	2	2	10	10	10	10	26	24	50	100
41	963519114306	GOKUL S	2	2	2	2	2	7	3	10	10	16	24	40	80
42	963519114307	HONEST RAJ S	2	2	2	2	2	10	10	10	10	26	24	50	100
43	963519114308	JOHN STEPIN J	2	2	2	2	2	10	10	10	10	26	24	50	100
44	963519114309	MUTHAMIL SELVAM M	2	2	2	2	2	10	10	10	10	26	24	50	100

45	963519114310	NIKESH M	2	0	2	1	1	3	3	4	4	10	10	20	40
46	963519114311	SANTHOSH K	2	2	2	2	2	10	10	10	10	26	24	50	100
47	963519114312	SUDHEESH M	2	2	2	2	2	10	10	10	10	26	24	50	100
48	963519114313	SUJIN M K	2	2	2	2	2	10	10	10	10	26	24	50	100
49	963519114314	KAMALESH K	2	2	2	2	2	10	10	10	10	26	24	50	100

Total No of Students	49
No of Students Absent	0
Total No of Students Appeared	49
Total No of Students Passed	42
Total No of Students Failed	7
Total Pass Percentage	**85.7%**

INTERNAL ASSESSMENT TEST-2:

STELLA MARY'S COLLEGE OF ENGINEERING

Aruthengavillai, Kallukatti Junction, Azhikal (PO), Kanyakumari District-629202

DEPARTMENT OF MECHANICAL ENGINEERING

COURSE OUTCOME (INTERNAL EXAM -II)

COURSE CODE / NAME : ME8793/Process Planning and Cost Estimation

COURSE HANDLED : Mr. I. P. Rakhesh

2022 -2023 (Odd)
S7

SL. NO.	Reg.No	Student Name	PART-A					PART-B & C				TOTAL		TOTAL	TOTAL
			CO 2	CO 2	CO 3	CO 3	CO 3	CO 2	CO 2	CO 3	CO 3	CO 2	CO 3		
			2	2	2	2	2	10	10	10	10	24	26	50	100
1	963519114001	AARON C	2	2	2	2	2	10	10	9	10	24	25	49	98
2	963519114002	ABILASH V A	2	0	2	1	1	3	3	3	4	8	11	19	38
3	963519114003	ABISHEK N T	2	2	2	2	2	10	10	10	10	24	26	50	100
4	963519114004	ABISHEK V L	2	2	2	2	2	10	10	10	6	24	22	46	92
5	963519114005	AJIN KUMAR R	2	2	2	2	2	10	10	10	10	24	26	50	100
6	963519114006	AKASH M V	2	2	2	2	2	10	7.5	10	10	22	26	48	95
7	963519114007	AKASH R	2	2	2	2	2	10	10	10	9.5	24	26	50	99
8	963519114008	AKASH R	2	2	2	2	2	10	9.5	10	10	24	26	50	99
9	963519114009	AKSHAY PRIAN M C	2	2	2	2	2	10	10	10	10	24	26	50	100
10	963519114010	ANUSH N	2	2	2	2	2	10	10	10	10	24	26	50	100
11	963519114011	AROCKIA SOBINSON D	2	2	2	2	2	10	10	10	7	24	23	47	94
12	963519114013	BHARATH J	2	0	2	1	1	3	3	4	4	8	12	20	40
13	963519114014	DANI MAMOOTTIL SHAJI	2	2	2	2	2	10	10	10	7.5	24	24	48	95
14	963519114016	DHARMALINGAM A	2	2	2	2	2	9.5	10	10	10	24	26	50	99
15	963519114017	INFANT JEENU B	2	2	2	2	2	10	7	10	10	21	26	47	94

16	963519114019	JENEETH SIJIN S	2	2	2	2	2	10	10	5.5	10	24	22	46	91
17	963519114020	LAKSHMANAN S	2	2	2	2	2	10	9.5	10	10	24	26	50	99
18	963519114021	LERIN DEONI S	2	2	2	2	2	10	10	7.5	10	24	24	48	95
19	963519114023	NAVI SIJU ANTONY T	2	2	2	2	2	10	10	6	10	24	22	46	92
20	963519114024	NIKESH RAJ M	2	2	2	2	2	10	10	9.5	10	24	26	50	99
21	963519114025	NISHANTH V	2	2	2	2	2	5.5	10	10	10	20	26	46	91
22	963519114026	RAVEEN R	2	2	2	2	2	10	10	10	10	24	26	50	100
23	963519114027	RENY R	2	0	2	1	1	3	3	4	4	8	12	20	40
24	963519114028	RISHIKESH P	2	2	2	2	2	10	10	10	10	24	26	50	100
25	963519114029	ROSHAN RAJAN M	2	2	2	2	2	10	10	10	10	24	26	50	100
26	963519114030	SAM STEPHEN G	2	2	2	2	2	10	10	10	9.5	24	26	50	99
27	963519114031	SANJAY BHARATHI M	2	2	2	2	2	10	10	10	10	24	26	50	100
28	963519114032	SANTHOSH M	2	0	1	2	0	4	3	2	1	9	6	15	30
29	963519114033	SARTHIKA M	2	2	2	2	2	10	10	10	10	24	26	50	100
30	963519114035	SHIKIL SHAN XAVIEO X	2	0	2	2	0	2	3	2	2	7	8	15	30
31	963519114036	SHYJU R	2	2	2	2	2	10	10	5.5	10	24	22	46	91
32	963519114038	SOMU C	2	2	2	2	2	10	10	10	10	24	26	50	100
33	963519114039	SUBITH M	2	2	2	2	2	7.5	10	10	10	22	26	48	95
34	963519114040	SURESH A	2	2	2	2	2	10	10	8	10	24	24	48	96
35	963519114041	VIGNESH N	2	2	2	2	2	10	9.5	10	10	24	26	50	99
36	963519114301	AJAY JENIFER M	2	2	2	2	2	10	10	10	10	24	26	50	100
37	963519114302	AJIN A	2	2	2	2	2	10	10	10	10	24	26	50	100
38	963519114303	ASTIL REJU A	2	2	2	2	2	7	10	10	10	21	26	47	94
39	963519114304	BABIN RAJ S	2	2	2	2	2	10	10	10	7	24	23	47	94
40	963519114305	BRYLIN JINO E	2	2	2	2	2	10	5.5	10	10	20	26	46	91
41	963519114306	GOKUL S	2	2	2	2	2	10	10	10	10	24	26	50	100
42	963519114307	HONEST RAJ S	2	2	2	2	2	10	10	10	10	24	26	50	100
43	963519114308	JOHN STEPIN J	2	2	2	2	2	10	10	10	5.5	24	22	46	91
44	963519114309	MUTHAMIL SELVAM M	2	2	2	2	2	6	10	10	10	20	26	46	92

45	963519114310	NIKESH M	2	2	2	2	2	10	10	5.5	10	24	22	46	91
46	963519114311	SANTHOSH K	2	2	2	2	2	10	10	7	10	24	23	47	94
47	963519114312	SUDHEESH M	2	0	2	1	1	3	3	4	4	8	12	20	40
48	963519114313	SUJIN M K	2	2	2	2	2	5.5	10	10	10	20	26	46	91
49	963519114314	KAMALESH K	2	2	2	2	2	10	8	10	10	22	26	48	96

Total No of Students	49
No of Students Absent	0
Total No of Students Appeared	49
Total No of Students Passed	43
Total No of Students Failed	6
Total Pass Percentage	**87.8%**

INTERNAL ASSESSMENT TEST-3:

STELLA MARY'S COLLEGE OF ENGINEERING

Aruthengavillai, Kallukatti Junction, Azhikal (PO), Kanyakumari District-629202

DEPARTMENT OF MECHANICAL ENGINEERING

COURSE OUTCOME (INTERNAL EXAM -III)

COURSE CODE / NAME : ME8793/Process Planning and Cost Estimation

COURSE HANDLED : Mr. I. P. Rakhesh

2022 -2023 (Odd)

S7

SL. NO.	Reg. NO.	Student Name	PART-A					PART-B & C				TOTAL		TOTAL	TOTAL
			CO 4	CO 4	CO 5	CO 5	CO 5	CO 4	CO 4	CO 5	CO 5	CO4	CO5		
			2	2	2	2	2	10	10	10	10	24	26	50	100
1	963519114001	AARON C	2	0	2	1	1	3	3	4	4	8	12	20	40
2	963519114002	ABILASH V A	2	2	2	2	2	10	9	7.5	9	23	22.5	46	91
3	963519114003	ABISHEK N T	2	2	2	2	2	10	10	10	10	24	26	50	100
4	963519114004	ABISHEK V L	2	2	2	2	2	10	10	8	10	24	24	48	96
5	963519114005	AJIN KUMAR R	2	2	2	2	2	10	10	10	10	24	26	50	100
6	963519114006	AKASH M V	2	2	2	2	2	10	10	9	10	24	25	49	98
7	963519114007	AKASH R	2	0	2	1	1	3	3	4	4	8	12	20	40
8	963519114008	AKASH R	2	2	2	2	2	10	10	10	10	24	26	50	100
9	963519114009	AKSHAY PRIAN M C	2	2	2	2	2	10	10	10	10	24	26	50	100
10	963519114010	ANUSH N	2	2	2	2	2	10	10	10	10	24	26	50	100
11	963519114011	AROCKIA SOBINSON D	2	2	2	2	2	10	10	7.5	10	24	23.5	48	95
12	963519114013	BHARATH J	2	2	2	2	2	10	8.5	10	10	22.5	26	49	97
13	963519114014	DANI MAMOOTTIL SHAJI	2	2	2	2	2	10	9	10	10	23	26	49	98
14	963519114016	DHARMALINGAM A	2	2	2	1	1	1	4	3	0	9	7	16	34
15	963519114017	INFANT JEENU B	2	2	2	2	2	8.5	10	10	10	23	26	49	97

16	963519114019	JENEETH SIJIN S	2	2	2	2	2	10	9	7	9	23	22	45	90
17	963519114020	LAKSHMANAN S	2	2	2	2	2	9	10	10	10	23	26	49	98
18	963519114021	LERIN DEONI S	2	2	2	2	2	10	8	10	10	22	26	48	96
19	963519114023	NAVI SIJU ANTONY T	2	2	2	2	2	10	10	10	8	24	24	48	96
20	963519114024	NIKESH RAJ M	2	2	2	2	2	10	10	10	10	24	26	50	100
21	963519114025	NISHANTH V	2	2	2	2	2	6	8.5	9	9	18.5	24	43	85
22	963519114026	RAVEEN R	2	2	2	2	2	10	10	10	10	24	26	50	100
23	963519114027	RENY R	2	2	2	2	2	7	9	9	9	20	24	44	88
24	963519114028	RISHIKESH P	2	2	2	2	2	10	10	7	10	24	23	47	94
25	963519114029	ROSHAN RAJAN M	2	2	2	2	2	10	10	7	9	24	22	46	92
26	963519114030	SAM STEPHEN G	2	2	2	2	2	10	10	10	10	24	26	50	100
27	963519114031	SANJAY BHARATHI M	2	2	2	2	2	10	10	10	10	24	26	50	100
28	963519114032	SANTHOSH M	2	2	2	1	1	1	4	3	0	9	7	16	34
29	963519114033	SARTHIKA M	2	2	2	2	2	10	10	10	10	24	26	50	100
30	963519114035	SHIKIL SHAN XAVIEO X	2	0	2	1	1	3	3	4	4	8	12	20	40
31	963519114036	SHYJU R	2	2	2	2	2	7	9	9	9.5	20	24.5	45	89
32	963519114038	SOMU C	2	2	2	2	2	10	10	10	10	24	26	50	100
33	963519114039	SUBITH M	2	0	2	1	1	3	3	4	4	8	12	20	40
34	963519114040	SURESH A	2	2	2	2	2	6	9	9	8.5	19	23.5	43	85
35	963519114041	VIGNESH N	2	2	2	2	2	8	10	10	10	22	26	48	96
36	963519114301	AJAY JENIFER M	2	2	2	2	2	10	10	10	10	24	26	50	100
37	963519114302	AJIN A	2	2	2	2	2	10	10	10	10	24	26	50	100
38	963519114303	ASTIL REJU A	2	2	2	2	2	10	10	10	8	24	24	48	96
39	963519114304	BABIN RAJ S	2	2	2	2	2	7	9	10	9	20	25	45	90
40	963519114305	BRYLIN JINO E	2	2	2	1	1	1	4	3	0	9	7	16	34
41	963519114306	GOKUL S	2	2	2	2	2	10	9	7	9	23	22	45	90
42	963519114307	HONEST RAJ S	2	2	2	2	2	10	10	10	10	24	26	50	100
43	963519114308	JOHN STEPIN J	2	2	2	2	2	10	8	10	10	22	26	48	96
44	963519114309	MUTHAMIL SELVAM M	2	2	2	2	2	8	10	10	10	22	26	48	96

45	963519114310	NIKESH M	2	2	2	2	2	7	9	10	9	20	25	45	90
46	963519114311	SANTHOSH K	2	2	2	2	2	10	10	10	8.5	24	25	49	97
47	963519114312	SUDHEESH M	2	2	2	2	2	10	10	10	8	24	24	48	96
48	963519114313	SUJIN M K	2	2	2	2	2	10	8	10	10	22	26	48	96
49	963519114314	KAMALESH K	2	2	2	1	1	1	4	3	0	9	7	16	34

Total No of Students	49
No of Students Absent	0
Total No of Students Appeared	49
Total No of Students Passed	41
Total No of Students Failed	8
Total Pass Percentage	**83.7%**

MODEL TEST:

STELLA MARY'S COLLEGE OF ENGINEERING

Aruthenguvillai, Kallukatti Junction, Azhikal (PO), Kanyakumari District-629202

DEPARTMENT OF MECHANICAL ENGINEERING

COURSE OUTCOME (MODEL EXAM)

COURSE CODE / NAME : ME8493/THERMAL ENGINEERING-I

COURSE HANDLED : Mr.P.VIJAYAN

2019 -2020 (Even)
S4

S.NO	Reg.No	Student Name	PART-A										PART-B					PART-C					TOTAL					TOTAL
			CO1	CO1	CO2	CO2	CO3	CO3	CO4	CO4	CO5	CO5	CO1	CO2	CO3	CO4	CO5	CO1	CO2	CO3	CO4	CO5	CO1	CO2	CO3	CO4	CO5	
			2	2	2	2	2	2	2	2	2	2	13	13	13	13	13					15	17	17	17	17	32	100
1	963518114001	ABISHEK S	2	2	2	2	2	2	2	2	2	2	10	10	11	12	11					14	14	14	15	16	29	88
2	963518114002	AHILAN C	2	2	2	2	2	2	2	2	2	2	5	6	6	7	6					10	9	10	10	11	20	60
3	963518114003	AJIN R L	2	2	2	2	2	2	2	2	2	2	10	10	11	12	11					14	14	14	15	16	29	88
4	963518114004	AJISH G	2	2	2	2	2	2	2	2	2	2	10	10	11	12	12					14	14	14	15	16	30	89
5	963518114005	AJITHA.S	2	2	2	2	2	2	2	2	2	2	4	0	0	1	0					0	8	4	4	5	4	25
6	963518114006	AKASH F	2	2	2	2	2	2	2	2	2	2	6	6	7	8	7					10	10	10	11	12	21	64
7	963518114008	AKILAN N J	2	2	2	2	2	2	2	2	2	2	8	8	9	9	8					12	12	12	13	13	24	74
8	963518114009	ALFIN DENNY T	2	2	2	2	2	2	2	2	2	2	10	10	11	12	11					14	14	14	15	16	29	88
9	963518114011	ANISH R	2	2	2	2	2	2	2	2	2	2	8	4	7	7	6					10	12	8	11	11	20	62
10	963518114012	ARAVINTH R	2	2	2	2	2	2	2	2	2	2	9	2	3	3	3					0	13	6	7	7	7	40
11	963518114014	ARUN R K	2	2	2	2	2	2	2	2	2	0	3	0	0	0	1					0	7	4	4	4	3	22
12	963518114015	ASPIN C	2	2	2	2	2	2	2	2	2	2	13	5	5	6	5					0	17	9	9	10	9	54
13	963518114016	BEBIN D	2	2	2	2	2	2	2	2	2	2	8	8	9	10	10					13	12	12	13	14	27	78
14	963518114017	BRABHAKARAN R	2	2	2	2	2	2	2	2	2	2	8	6	8	8	7					11	12	10	12	12	22	68
15	963518114018	CHANDRU R	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					0	0	0	0	0	0	0
16	963518114019	DAVID HARRIS J	2	2	2	2	2	2	2	2	2	2	6	6	7	8	7					11	10	10	11	12	22	65
17	963518114020	ERNESTA CHEGUEVARA P	2	2	2	2	2	2	2	2	2	0	3	0	0	0	1					0	7	4	4	4	3	22
18	963518114021	FRANCIS REGHNAL R S	2	2	2	2	2	2	2	2	2	2	4	8	7	7	6					10	8	12	11	11	20	62
19	963518114022	HARI HARA MANI S	2	2	2	2	2	2	2	2	2	2	8	4	7	8	7					11	12	8	11	12	22	65
20	963518114023	JASON V S	2	2	2	2	2	2	2	2	2	2	7	2	2	2	2					0	11	6	6	6	6	35
21	963518114024	JENISH RAHUL S	2	2	2	2	2	2	2	2	2	2	10	8	10	11	11					14	14	12	14	15	29	84
22	963518114025	JERIN J	2	2	2	2	2	2	2	2	2	2	4	0	0	1	0					0	8	4	4	5	4	25
23	963518114026	JERIN S	2	2	2	2	2	2	2	2	2	2	9	9	10	11	10					13	13	13	14	15	27	82
24	963518114027	JERSON J	2	2	2	2	2	2	2	2	2	2	6	6	7	8	7					10	10	10	11	12	21	64
25	963518114028	JOHN FERADS J	2	2	2	2	2	2	2	2	2	2	8	4	7	7	6					10	12	8	11	11	20	62
26	963518114029	KARTHIKEYAN S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					0	0	0	0	0	0	0
27	963518114030	MELBIN D	2	2	2	2	2	2	2	2	2	2	6	4	5	6	5					9	10	8	9	10	18	55
28	963518114031	MONISH J	2	2	2	2	2	2	2	2	2	2	4	0	0	1	0					0	8	4	4	5	4	25
29	963518114032	MUGESH ARAVINTH M G	2	2	2	2	2	2	2	2	2	2	6	6	7	8	7					11	10	10	11	12	22	65
30	963518114033	NABIN N	2	2	2	2	2	2	2	2	2	2	10	3	4	4	4					0	14	7	8	8	8	45
31	963518114034	NAMBI RAJA P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					0	0	0	0	0	0	0
32	963518114035	OBISIAN R K	2	2	2	2	2	2	2	2	2	2	3	0	0	0	0					0	7	4	4	4	4	23
33	963518114036	RATHEESH KUMAR R S	2	2	2	2	2	2	2	2	2	2	4	8	7	8	7					11	8	12	11	12	22	65
34	963518114037	SATHTHEESH S S	2	2	2	2	2	2	2	2	2	2	7	2	2	2	2					0	11	6	6	6	6	35
35	963518114038	SEFINSHA B	2	2	2	2	2	2	2	2	2	2	2	2	0	1	0					0	6	6	4	5	4	25
36	963518114039	SOMANATHAVAISU K	2	2	2	2	2	2	2	2	2	2	3	7	5	6	5					9	7	11	9	10	18	55
37	963518114040	STEEVE WAVGH	2	2	2	2	2	2	2	2	2	2	4	8	7	7	6					10	8	12	11	11	20	62
38	963518114041	SUJITH M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					0	0	0	0	0	0	0
39	963518114042	THANU A	2	2	2	2	2	2	2	2	2	2	7	8	8	9	8					12	11	12	12	13	24	72
40	963518114043	ABDULRAHMAN K	2	2	2	2	2	2	2	2	2	2	4	0	0	0	0					0	8	4	4	4	4	24

41	9635118114049	JERLIN R	2	2	2	2	2	2	2	2	2	2	4	0	0	1	0					0	8	4	4	5	4	25
42	9635118114050	JESHWIN ARUL J	2	2	2	2	2	2	2	2	2	2	13	4	5	5	5					0	17	8	9	9	9	52
43	9635118114051	NAGARAJAN S	2	2	2	2	2	2	2	2	2	2	10	10	11	12	11					14	14	14	15	16	29	88
44	9635118114052	RIJOLAKOSE	2	2	2	2	2	2	2	2	2	2	9	9	10	11	10					13	13	13	14	15	27	82
45	9635118114054	ROY BHEVAN M	2	2	2	2	2	2	2	2	2	2	12	12	13	14	12					15	16	16	17	18	31	98
46	9635118114055	SREEJITH T	2	2	2	2	2	2	2	2	2	2	11	11	12	13	12					15	15	15	16	17	31	94
47	9635118114302	AJITH K	2	2	2	0	2	0	2	0	0	0	0	0	0	0	1					0	4	2	2	2	1	11
48	9635118114303	ANTO KAUSHIK	2	2	2	2	2	2	2	2	2	2	8	2	5	6	5					9	12	6	8	10	18	55
49	9635118114304	EZHIL RAM R L	2	2	2	0	2	2	2	2	2	0	3	1	0	0	1					0	7	3	4	4	3	21
50	9635118114306	NISHANTH T	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					0	0	0	0	0	0	0
51	9635118114308	RADHU R	2	2	2	2	2	2	2	2	2	2	9	10	10	11	11					14	13	14	14	15	29	85
52	9635118114309	SHAJEEN M S	2	2	2	2	2	2	2	2	2	2	8	8	9	10	10					13	12	12	13	14	27	78
53	9635118114701	SANGEETH A S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					0	0	0	0	0	0	0
54	9635118114702	ADHARSH.GOPI	2	2	2	2	2	2	2	2	2	2	9	7	9	9	8					12	13	11	13	13	24	74
55	9635118114703	ABDUL HAKKIM	2	2	2	2	2	2	2	2	2	2	6	6	7	8	7					11	10	10	11	12	22	65

Total No of Students	55
No of Students Absent	0
Total No of Students Appeared	55
Total No of Students Passed	34
Total No of Students Failed	21
Total Pass Percentage	61.8%

ASIGNMENT:

STELLA MARY'S COLLEGE OF ENGINEERING

Aruthengavillai, Kallukatti Junction, Azhikal (PO), Kanyakumari District-629202

DEPARTMENT OF MECHANICAL ENGINEERING

COURSE OUTCOME (ASSIGNMENT)

COURSE CODE / NAME : ME8793/Process Planning and Cost Estimation

COURSE HANDLED : Mr. I. P. Rakhesh

2022 -2023 (Odd)
S7

S.NO	Reg.No	Student Name	CO1	CO2	CO3	CO4	CO5	TOTAL	TOTAL
			10	10	10	10	10	50	100
1	963519114001	AARON C	9	10	10	9	10	48	96
2	963519114002	ABILASH V A	8	6	10	8	10	42	84
3	963519114003	ABISHEK N T	9	9	8	9	10	45	90
4	963519114004	ABISHEK V L	10	9	6	10	10	45	90
5	963519114005	AJIN KUMAR R	10	10	9	10	10	49	98
6	963519114006	AKASH M V	6	8	8	6	10	38	76
7	963519114007	AKASH R	9	6	10	9	9	43	86
8	963519114008	AKASH R	9	9	7	9	8	42	84
9	963519114009	AKSHAY PRIAN M C	10	8	7	10	9	44	88
10	963519114010	ANUSH N	8	10	9	8	10	45	90
11	963519114011	AROCKIA SOBINSON D	6	10	7	6	10	39	78
12	963519114013	BHARATH J	9	10	8	9	6	42	84
13	963519114014	DANI MAMOOTTIL SHAJI	8	10	9	8	9	44	88
14	963519114016	DHARMALINGAM A	10	10	10	10	9	49	98
15	963519114017	INFANT JEENU B	7	10	10	7	10	44	88

16	963519114019	JENEETH SIJIN S	7	9	6	7	8	37	74
17	963519114020	LAKSHMANAN S	9	8	9	9	6	41	82
18	963519114021	LERIN DEONI S	7	9	9	7	9	41	82
19	963519114023	NAVI SIJU ANTONY T	10	10	10	10	8	48	96
20	963519114024	NIKESH RAJ M	10	10	8	10	10	48	96
21	963519114025	NISHANTH V	10	6	6	10	7	39	78
22	963519114026	RAVEEN R	10	9	9	8	7	43	86
23	963519114027	RENY R	10	9	8	6	9	42	84
24	963519114028	RISHIKESH P	10	10	10	9	7	46	92
25	963519114029	ROSHAN RAJAN M	7	8	7	8	10	40	80
26	963519114030	SAM STEPHEN G	7	6	7	10	10	40	80
27	963519114031	SANJAY BHARATHI M	9	9	9	7	10	44	88
28	963519114032	SANTHOSH M	7	8	7	7	8	37	74
29	963519114033	SARTHIKA M	10	10	10	9	6	45	90
30	963519114035	SHIKIL SHAN XAVIEO X	10	7	10	7	9	43	86
31	963519114036	SHYJU R	9	7	6	10	8	40	80
32	963519114038	SOMU C	8	9	9	10	10	46	92
33	963519114039	SUBITH M	9	7	9	10	7	42	84
34	963519114040	SURESH A	10	10	10	10	7	47	94
35	963519114041	VIGNESH N	10	10	8	9	9	46	92
36	963519114301	AJAY JENIFER M	6	10	6	8	7	37	74
37	963519114302	AJIN A	9	10	9	9	10	47	94
38	963519114303	ASTIL REJU A	9	10	8	10	10	47	94
39	963519114304	BABIN RAJ S	10	10	10	10	8	48	96
40	963519114305	BRYLIN JINO E	8	10	7	6	6	37	74
41	963519114306	GOKUL S	6	9	7	9	9	40	80
42	963519114307	HONEST RAJ S	9	8	9	9	8	43	86
43	963519114308	JOHN STEPIN J	8	9	7	10	10	44	88
44	963519114309	MUTHAMIL SELVAM M	10	10	10	8	7	45	90

45	963519114310	NIKESH M	7	10	8	6	7	38	76
46	963519114311	SANTHOSH K	7	6	6	9	9	37	74
47	963519114312	SUDHEESH M	9	9	9	8	7	42	84
48	963519114313	SUJIN M K	7	9	8	10	10	44	88
49	963519114314	KAMALESH K	10	10	10	7	6	43	86

SEMESTER END EXAM:

STELLA MARY'S COLLEGE OF ENGINEERING

Aruthengavillai, Kallukatti Junction, Azhikal (PO), Kanyakumari District-629202

DEPARTMENT OF MECHANICAL ENGINEERING

COURSE OUTCOME (SEMESTER END EXAM)

COURSE CODE / NAME : ME8793/Process Planning and Cost Estimation

COURSE HANDLED : Mr. I. P. Rakhesh

ACADEMIC YEAR : 2022 -2023 (Odd) SEMESTER : S7

S.NO	Reg.No	Student Name	SEE		
			GRADE	VALUE	For Each CO'S
1	963519114001	AARON C	B	60	12
2	963519114002	ABILASH V A	B	60	12
3	963519114003	ABISHEK N T	B+	70	14
4	963519114004	ABISHEK V L	U	34	6.8
5	963519114005	AJIN KUMAR R	U	29	5.8
6	963519114006	AKASH M V	B	60	12
7	963519114007	AKASH R	U	34	6.8
8	963519114008	AKASH R	B+	70	14
9	963519114009	AKSHAY PRIAN M C	U	29	5.8
10	963519114010	ANUSH N	U	28	5.6
11	963519114011	AROCKIA SOBINSON D	U	26	5.2
12	963519114013	BHARATH J	U	34	6.8
13	963519114014	DANI MAMOOTTIL SHAJI	B	60	12
14	963519114016	DHARMALINGAM A	U	33	6.6

15	963519114017	INFANT JEENU B	U	29	5.8
16	963519114019	JENEETH SIJIN S	U	34	6.8
17	963519114020	LAKSHMANAN S	A	80	16
18	963519114021	LERIN DEONI S	U	28	5.6
19	963519114023	NAVI SIJU ANTONY T	B+	70	14
20	963519114024	NIKESH RAJ M	U	27	5.4
21	963519114025	NISHANTH V	UA	0	0
22	963519114026	RAVEEN R	A	80	16
23	963519114027	RENY R	U	26	5.2
24	963519114028	RISHIKESH P	U	28	5.6
25	963519114029	ROSHAN RAJAN M	U	29	5.8
26	963519114030	SAM STEPHEN G	U	29	5.8
27	963519114031	SANJAY BHARATHI M	B	60	12
28	963519114032	SANTHOSH M	B	60	12
29	963519114033	SARTHIKA M	A	80	16
30	963519114035	SHIKIL SHAN XAVIEO X	U	31	6.2
31	963519114036	SHYJU R	U	33	6.6
32	963519114038	SOMU C	B+	70	14
33	963519114039	SUBITH M	U	34	6.8
34	963519114040	SURESH A	U	29	5.8
35	963519114041	VIGNESH N	B	60	12
36	963519114301	AJAY JENIFER M	U	35	7
37	963519114302	AJIN A	U	35	7
38	963519114303	ASTIL REJU A	U	32	6.4
39	963519114304	BABIN RAJ S	UA	0	0
40	963519114305	BRYLIN JINO E	U	31	6.2
41	963519114306	GOKUL S	U	32	6.4
42	963519114307	HONEST RAJ S	U	31	6.2

43	963519114308	JOHN STEPIN J	B	60	12
44	963519114309	MUTHAMIL SELVAM M	B	60	12
45	963519114310	NIKESH M	U	29	5.8
46	963519114311	SANTHOSH K	U	32	6.4
47	963519114312	SUDHEESH M	B	60	12
48	963519114313	SUJIN M K	B	60	12
49	963519114314	KAMALESH K	U	32	6.4

Total No of Students	49
No of Students Absent	2
Total No of Students Appeared	47
Total No of Students Passed	18
Total No of Students Failed	29
Total Pass Percentage	**38.3%**

COURSE EXIT SURVEY:

STELLA MARY'S COLLEGE OF ENGINEERING

Aruthengavillai, Kallukatti Junction, Azhikal (p.o), Kanyakumari District - 629 202

DEPARTMENT OF MECHANICAL ENGINEERING

INDIRECT SURVEY

COURSE CODE / NAME : ME8793/Process Planning and Cost Estimation

COURSE HANDLED : Mr. I. P. Rakhesh

ACADEMIC YEAR : **2022 -2023 (Odd)** **SEMESTER : S7**

Number of Student: 49

Cos	Strong (S	)Medium (M)	Low (L)	SUM (3*S + 2*M + 1*L)	CO Attainment (SUM/No of Students)	Average INDIRECT CO Attainment
CO1	25	20	4	119	2.429	
CO2	24	19	6	116	2.367	
CO3	24	19	6	116	2.367	
CO4	23	23	3	118	2.408	**2.3592**
CO5	20	20	9	109	2.224	
TOTAL					11.80	

STELLA MARY'S COLLEGE OF ENGINEERING

Aruthenganvilai, Kallukatti Junction, Azhikal Post, Kanyakumari District – 629202

DEPARTMENT OF MECHANICAL ENGINEERING

STUDENT - COURSE EXIT SURVEY FORM

2022-2023 (Odd)

COURSE: ME8793 PROCESS PLANNING AND COST ESTIMATION

Please take a few minutes to answer the following questions. This is survey of knowledge level acquired (Course Outcomes) for a particular course, please rate accordingly. Students are required to give their responses recorded by using 3-point scale as follows.

Question No.	Particulars	Extremely Satisfied (3)	Satisfied (2)	Some What Satisfied (1)
1.	Did the course help you to choose the process, equipment and tools for various products? (CO1)			
2.	Were you able to prepare process planning activity chart based on various process parameters? (CO2)			
3.	Were you able to describe the concept of cost estimation and its procedure? (CO3)			
4.	Whether the course content adequately addressed to estimate the cost for a job in a forging shop, welding shop and foundry shop? (CO4)			
5.	Has the course concept uses to calculate the time for machining in various machining operations? (CO5)			

Please offer any other additional comments for improvement of the course.

NAME :

REGISTER NO :

YEAR : **SIGNATURE**

STELLA MARY'S COLLEGE OF ENGINEERING

Aruthenganvilai, Kallukatti Junction, Azhikal Post, Kanyakumari District – 629202

DEPARTMENT OF MECHANICAL ENGINEERING

STUDENT - COURSE EXIT SURVEY CONSOLIDATED SHEET

(2022-2023 Odd)

COURSE: ME8793 PROCESS PLANNING AND COST ESTIMATION

Sl. No.	Register No.	Name of the Student	QUESTIONS					Student Signature
			1	2	3	4	5	
1.	963519114001	AARON C	2	2	3	3	3	
2.	963519114002	ABILASH V A	3	3	2	3	2	Abilash.
3.	963519114003	ABISHEK N T	3	3	2	3	3	
4.	963519114004	ABISHEK V L	3	3	3	3	3	
5.	963519114005	AJIN KUMAR R	3	2	3	2	3	
6.	963519114006	AKASH M V	1	3	2	2	3	
7.	963519114007	AKASH R	2	2	2	3	1	
8.	963519114008	AKASH R	3	2	1	3	2	
9.	963519114009	AKSHAY PRIAN M C	2	2	1	1	3	
10.	963519114010	ANUSH N	3	3	2	2	3	
11.	963519114011	AROCKIA SOBINSON D	3	2	2	1	3	
12.	963519114013	BHARATH J	2	3	3	3	3	
13.	963519114014	DANI MAMOOTTIL SHAJI	3	2	3	2	3	
14.	963519114016	DHARMALINGAM A	3	2	1	2	3	
15.	963519114017	INFANT JEENU B	2	1	3	2	1	
16.	963519114019	JENEETH SIJIN S	2	1	3	2	1	
17.	963519114020	LAKSHMANAN S	2	1	2	3	3	
18.	963519114021	LERIN DEONI S	1	2	3	3	2	
19.	963519114023	NAVI SIJU ANTONY T	2	3	3	2	3	
20.	963519114024	NIKESH RAJ M	3	3	2	2	1	
21.	963519114025	NISHANTH V	3	2	3	3	1	
22.	963519114026	RAVEEN R	2	3	2	3	2	
23.	963519114027	RENY R	3	1	2	2	2	

24.	963519114028	RISHIKESH P	3	2	2	3	3	
25.	963519114029	ROSHAN RAJAN M	2	2	3	3	3	
26.	963519114030	SAM STEPHEN G	2	3	2	2	3	
27.	963519114031	SANJAY BHARATHI M	2	3	2	2	3	
28.	963519114032	SANTHOSH M	3	2	2	3	2	
29.	963519114033	SARTHIKA M	2	2	3	3	3	
30.	963519114035	SHIKIL SHAN XAVIEO X	3	3	2	2	3	
31.	963519114036	SHYJU R	3	3	2	3	3	
32.	963519114038	SOMU C	3	3	3	2	2	
33.	963519114039	SUBITH M	3	3	2	2	2	
34.	963519114040	SURESH A	2	2	3	2	3	
35.	963519114041	VIGNESH N	2	2	3	2	2	
36.	963519114301	AJAY JENIFER M	2	1	3	3	3	
37.	963519114302	AJIN A	3	2	2	3	3	
38.	963519114303	ASTIL REJU A	3	2	2	3	1	
39.	963519114304	BABIN RAJ S	1	2	2	1	3	
40.	963519114305	BRYLIN JINO E	2	1	1	1	2	
41.	963519114306	GOKUL S	3	3	2	2	2	
42.	963519114307	HONEST RAJ S	3	3	3	2	1	
43.	963519114308	JOHN STEPIN J	3	3	3	3	3	
44.	963519114309	MUTHAMIL SELVAM M	2	3	1	2	3	
45.	963519114310	NIKESH M	3	3	3	2	1	
46.	963519114311	SANTHOSH K	2	3	3	3	3	
47.	963519114312	SUDHEESH M	2	3	2	3	2	
48.	963519114313	SUJIN M K	1	3	2	2	1	
49.	963519114314	KAMALESH K	3	2	1	2	3	
Total Number of Extremely Satisfied (3-Strong)			25	24	24	23	20	
Total Number of Satisfied (2-Medium)			20	19	19	23	20	
Total Number of Some What Satisfied (1-Low)			4	6	6	3	9	

Course Coordinator

DEPARTMENT OF MECHANICAL ENGINEERING
SMCE
ARUTHENGANVILAI
AZHIKKAL POST - 629 202
KANYAKUMARI DISTRICT

Programme Coordinator

Head of Department
Department of Mechanical Engineering
Stella Mary's College of Engineering
Aruthenganvilai, Azhikal Post
Kanyakumari District-629 202, Tamil Nadu

CO ATTAINMENT CALCULATION:

STELLA MARY'S COLLEGE OF ENGINEERING

Aruthengavillai, Kallukatti Junction, Azhikal (p.o), Kanyakumari District - 629 202

Department of Mechanical Engineering

R2017 Regulations - Academic Year 2021-2022

COURSE CODE / NAME : ME8793/Process Planning and Cost Estimation
COURSE HANDLED : Mr. I. P. Rakhesh
SEMESTER : S7
Number of Student: 49

INTERNAL EXAMINATION			CO1								CO2								CO3								CO4								CO5							
S. No	Hall Ticket.No	Student Name	CO1	INT. TOT 100 %	INT TOT-60%	SEE	SEE 40%	TS	ATT	AW	CO2	INT. TOT 100 %	INT. TOT 60%	SEE	SEE 40%	TS	ATT	AW	CO3	INT. TOT 100 %	INT TOT-60%	SEE	SEE 40%	TS	ATT	AW	CO4	INT. TOT 100 %	INT. TOT 60%	SEE	SEE 40%	TS	ATT	AW	CO5	INT. TOT 100 %	INT TOT-60%	SEE	SEE 40%	TS	ATT	AW
			68	100	60	20	40	100		3	75	100	60	20	40	100		3	53	100	60	20	40	100		3	51	100	60	20	40	100		3	53	100	60	20	40	100		3
1	963519114001	AARON C	41	60	36	12	24	60	YES	2	60	80	48	12	24	72	YES	3	52	98	59	12	24	83	YES	3	24	47	28	12	24	52	YES	1	29	55	33	12	24	57	YES	2
2	963519114002	ABILASH V A	51	75	45	12	24	69	YES	2	38	51	30	12	24	54	YES	1	38	72	43	12	24	67	YES	2	38	75	45	12	24	69	YES	2	40	75	45	12	24	69	YES	2
3	963519114003	ABISHEK N T	42	62	37	14	28	65	YES	2	65	87	52	14	28	80	YES	3	41	77	46	14	28	74	YES	3	38	75	45	14	28	73	YES	3	43	81	49	14	28	77	YES	3
4	963519114004	ABISHEK V L	68	100	60	6.8	14	74	YES	3	65	87	52	7	14	66	YES	2	45	85	51	7	14	65	YES	2	41	80	48	7	14	62	YES	2	41	77	46	7	14	60	YES	2
5	963519114005	AJIN KUMAR R	68	100	60	5.8	12	72	YES	3	75	100	60	6	12	72	YES	3	52	98	59	6	12	70	YES	2	51	100	60	6	12	72	YES	3	43	81	49	6	12	60	YES	2
6	963519114006	AKASH M V	64	94	56	12	24	80	YES	3	69	91	55	12	24	79	YES	3	51	96	58	12	24	82	YES	3	37	73	44	12	24	68	YES	2	52	98	59	12	24	83	YES	3
7	963519114007	AKASH R	57	84	50	6.8	14	64	YES	2	71	95	57	7	14	70	YES	2	53	99	59	7	14	73	YES	3	24	47	28	7	14	42	NO	1	28	53	32	7	14	45	NO	1
8	963519114008	AKASH R	67	99	59	14	28	87	YES	3	74	98	59	14	28	87	YES	3	40	75	45	14	28	73	YES	3	50	98	59	14	28	87	YES	3	51	96	58	14	28	86	YES	3
9	963519114009	AKSHAY PRIAN M C	50	74	44	5.8	12	56	YES	2	69	92	55	6	12	67	YES	2	39	74	44	6	12	56	YES	2	40	78	47	6	12	59	YES	2	42	79	48	6	12	59	YES	2
10	963519114010	ANUSH N	66	97	58	5.6	11	69	YES	2	63	84	50	6	11	62	YES	2	52	98	59	6	11	70	YES	2	49	96	58	6	11	69	YES	2	53	100	60	6	11	71	YES	3
11	963519114011	AROCKIA SOBINSON D	54	79	48	5.2	10	58	YES	2	69	92	55	5	10	66	YES	2	47	89	53	5	10	64	YES	2	47	92	55	5	10	66	YES	2	51	95	57	5	10	68	YES	2
12	963519114013	BHARATH J	67	99	59	6.8	14	73	YES	3	48	64	38	7	14	52	YES	1	37	70	42	7	14	55	YES	2	49	95	57	7	14	71	YES	3	49	92	55	7	14	69	YES	2
13	963519114014	DANI MAMOOTTIL SHAJI	66	97	58	12	24	82	YES	3	73	97	58	12	24	82	YES	3	40	75	45	12	24	69	YES	2	48	94	56	12	24	80	YES	3	52	98	59	12	24	83	YES	3
14	963519114016	DHARMALINGAM A	53	78	47	6.6	13	60	YES	2	56	74	44	7	13	58	YES	2	53	100	60	7	13	73	YES	3	26	51	31	7	13	44	NO	1	33	62	37	7	13	51	YES	1
15	963519114017	INFANT JEENU B	65	96	57	5.8	12	69	YES	2	69	92	55	6	12	67	YES	2	43	81	49	6	12	60	YES	2	47	91	55	6	12	66	YES	2	43	81	49	6	12	60	YES	2
16	963519114019	JENEETH SIJIN S	65	96	57	6.8	14	71	YES	3	56	75	45	7	14	58	YES	2	45	84	50	7	14	64	YES	2	47	92	55	7	14	69	YES	2	37	70	42	7	14	55	YES	2
17	963519114020	LAKSHMANAN S	57	84	50	16	32	82	YES	3	72	95	57	16	32	89	YES	3	52	98	59	16	32	91	YES	3	49	96	58	16	32	90	YES	3	39	74	44	16	32	76	YES	3
18	963519114021	LERIN DEONI S	38	56	34	5.6	11	45	NO	1	60	80	48	6	11	59	YES	2	41	76	46	6	11	57	YES	2	34	67	40	6	11	51	YES	1	40	75	45	6	11	56	YES	2
19	963519114023	NAVI SIJU ANTONY T	68	100	60	14	28	88	YES	3	65	87	52	14	28	80	YES	3	49	92	55	14	28	83	YES	3	51	100	60	14	28	88	YES	3	39	74	44	14	28	72	YES	3
20	963519114024	NIKESH RAJ M	68	100	60	5.4	11	71	YES	3	75	100	60	5	11	71	YES	3	41	76	46	5	11	57	YES	2	51	100	60	5	11	71	YES	3	43	81	49	5	11	59	YES	2
21	963519114025	NISHANTH V	47	69	41	0	0	41	NO	1	71	94	56	0	0	56	YES	2	49	92	55	0	0	55	YES	2	36	70	42	0	0	42	NO	1	38	72	43	0	0	43	NO	1
22	963519114026	RAVEEN R	68	100	60	16	32	92	YES	3	75	100	60	16	32	92	YES	3	52	98	59	16	32	91	YES	3	49	96	58	16	32	90	YES	3	40	75	45	16	32	77	YES	3
23	963519114027	RENY R	29	43	26	5.2	10	36	NO	1	28	37	22	5	10	33	NO	1	35	66	40	5	10	50	YES	1	31	61	36	5	10	47	NO	1	40	75	45	5	10	56	YES	2
24	963519114028	RISHIKESH P	62	91	55	5.6	11	66	YES	2	75	100	60	6	11	71	YES	3	53	100	60	6	11	71	YES	3	40	78	47	6	11	58	YES	2	37	70	42	6	11	53	YES	1
25	963519114029	ROSHAN RAJAN M	55	81	49	5.8	12	60	YES	2	64	85	51	6	12	63	YES	2	50	94	57	6	12	68	YES	2	39	76	46	6	12	57	YES	2	39	74	44	6	12	56	YES	2
26	963519114030	SAM STEPHEN G	55	81	49	5.8	12	60	YES	2	72	96	58	6	12	69	YES	2	50	93	56	6	12	68	YES	2	41	80	48	6	12	60	YES	2	43	81	49	6	12	60	YES	2
27	963519114031	SANJAY BHARATHI M	67	99	59	12	24	83	YES	3	74	99	59	12	24	83	YES	3	52	98	59	12	24	83	YES	3	38	75	45	12	24	69	YES	2	53	100	60	12	24	84	YES	3
28	963519114032	SANTHOSH M	54	79	48	12	24	72	YES	3	55	73	44	12	24	68	YES	2	20	38	23	12	24	47	NO	1	23	45	27	12	24	51	YES	1	22	42	25	12	24	49	NO	1
29	963519114033	SARTHIKA M	68	100	60	16	32	92	YES	3	75	100	60	16	32	92	YES	3	53	100	60	16	32	92	YES	3	50	98	59	16	32	91	YES	3	49	92	55	16	32	87	YES	3

S. No	Hall Ticket.No	Student Name	CO1	INT. TOT 100 %	INT TOT-60%	SEE	SEE 40%	TS	ATT	AW	CO2	INT. TOT 100 %	INT. TOT 60%	SEE	SEE 40%	TS	ATT	AW	CO3	INT. TOT 100 %	INT TOT-60%	SEE	SEE 40%	TS	ATT	AW	CO4	INT. TOT 100 %	INT. TOT 60%	SEE	SEE 40%	TS	ATT	AW	CO5	INT. TOT 100 %	INT TOT-60%	SEE	SEE 40%	TS	ATT	AW
30	963519114035	SHIKIL SHAN XAVIEO X	60	88	53	6.2	12	65	YES	2	48	64	38	6	12	51	YES	1	35	66	40	6	12	52	YES	1	22	43	26	6	12	38	NO	1	28	53	32	6	12	44	NO	1
31	963519114036	SHYJU R	48	71	42	6.6	13	56	YES	2	74	99	59	7	13	72	YES	3	45	84	50	7	13	64	YES	2	37	73	44	7	13	57	YES	2	40	75	45	7	13	58	YES	2
32	963519114038	SOMU C	56	82	49	14	28	77	YES	3	73	97	58	14	28	86	YES	3	52	98	59	14	28	87	YES	3	51	100	60	14	28	88	YES	3	53	100	60	14	28	88	YES	3
33	963519114039	SUBITH M	51	75	45	6.8	14	59	YES	2	48	63	38	7	14	52	YES	1	52	98	59	7	14	72	YES	3	25	49	29	7	14	43	NO	1	26	49	29	7	14	43	NO	1
34	963519114040	SURESH A	32	47	28	5.8	12	40	NO	1	51	68	41	6	12	52	YES	1	41	77	46	6	12	58	YES	2	36	71	42	6	12	54	YES	1	38	71	42	6	12	54	YES	1
35	963519114041	VIGNESH N	64	94	56	12	24	80	YES	3	75	99	60	12	24	84	YES	3	41	77	46	12	24	70	YES	2	48	94	56	12	24	80	YES	3	42	79	48	12	24	72	YES	3
36	963519114301	AJAY JENIFER M	64	94	56	7	14	70	YES	2	61	81	49	7	14	63	YES	2	49	92	55	7	14	69	YES	2	49	96	58	7	14	72	YES	3	40	75	45	7	14	59	YES	2
37	963519114302	AJIN A	45	66	40	7	14	54	YES	1	64	85	51	7	14	65	YES	2	41	77	46	7	14	60	YES	2	36	71	42	7	14	56	YES	2	40	75	45	7	14	59	YES	2
38	963519114303	ASTIL REJU A	67	99	59	6.4	13	72	YES	3	70	93	56	6	13	68	YES	2	41	77	46	6	13	59	YES	2	41	80	48	6	13	61	YES	2	41	77	46	6	13	59	YES	2
39	963519114304	BABIN RAJ S	61	89	53	0	0	53	YES	1	65	87	52	0	0	52	YES	1	50	94	57	0	0	57	YES	2	37	73	44	0	0	44	NO	1	40	75	45	0	0	45	NO	1
40	963519114305	BRYLIN JINO E	56	82	49	6.2	12	62	YES	2	69	91	55	6	12	67	YES	2	50	94	57	6	12	69	YES	2	32	63	38	6	12	50	YES	1	20	38	23	6	12	35	NO	1
41	963519114306	GOKUL S	44	65	39	6.4	13	52	YES	1	71	95	57	6	13	70	YES	2	50	94	57	6	13	69	YES	2	39	76	46	6	13	59	YES	2	38	72	43	6	13	56	YES	2
42	963519114307	HONEST RAJ S	48	71	42	6.2	12	55	YES	1	62	83	50	6	12	62	YES	2	45	85	51	6	12	63	YES	2	38	75	45	6	12	57	YES	2	41	77	46	6	12	59	YES	2
43	963519114308	JOHN STEPIN J	66	97	58	12	24	82	YES	3	73	97	58	12	24	82	YES	3	36	67	40	12	24	64	YES	2	39	76	46	12	24	70	YES	2	43	81	49	12	24	73	YES	3
44	963519114309	MUTHAMIL SELVAM M	68	100	60	12	24	84	YES	3	71	95	57	12	24	81	YES	3	43	81	49	12	24	73	YES	3	37	73	44	12	24	68	YES	2	40	75	45	12	24	69	YES	2
45	963519114310	NIKESH M	49	72	43	5.8	12	55	YES	1	48	64	38	6	12	50	YES	1	47	88	53	6	12	64	YES	2	33	65	39	6	12	50	YES	1	39	74	44	6	12	56	YES	2
46	963519114311	SANTHOSH K	43	63	38	6.4	13	51	YES	1	61	81	49	6	13	62	YES	2	39	74	44	6	13	57	YES	2	44	86	52	6	13	65	YES	2	42	78	47	6	13	60	YES	2
47	963519114312	SUDHEESH M	46	68	41	12	24	65	YES	2	46	61	37	12	24	61	YES	2	26	49	29	12	24	53	YES	1	35	69	41	12	24	65	YES	2	37	70	42	12	24	66	YES	2
48	963519114313	SUJIN M K	44	65	39	12	24	63	YES	2	59	78	47	12	24	71	YES	3	41	77	46	12	24	70	YES	2	42	82	49	12	24	73	YES	3	44	83	50	12	24	74	YES	3
49	963519114314	KAMALESH K	45	66	40	6.4	13	53	YES	1	59	79	47	6	13	60	YES	2	42	79	48	6	13	60	YES	2	21	41	25	6	13	38	NO	1	20	38	23	6	13	35	NO	1
							AVG	66.2	C01	2.16					AVG	23	CO2	2.22					AVG	67	CO3	2.22					AVG	63	CO4	2.00					AVG	62	CO5	2.06
							YES	45							YES	48							YES	48							YES	41						YES	41		
							NO	4							NO	1							NO	1							NO	8						NO	8		
							NA	0							NA	0								NA	0							NA	0						NA	0	
						TOTAL		49							TOTAL	49									49							49							49	
		% OF STUDENT ATTAINED						91.8367								98									98							84							84	
		Attainment Level						3								3									3							3							3	

CO ATTAINMENT:

STELLA MARY'S COLLEGE OF ENGINEERING

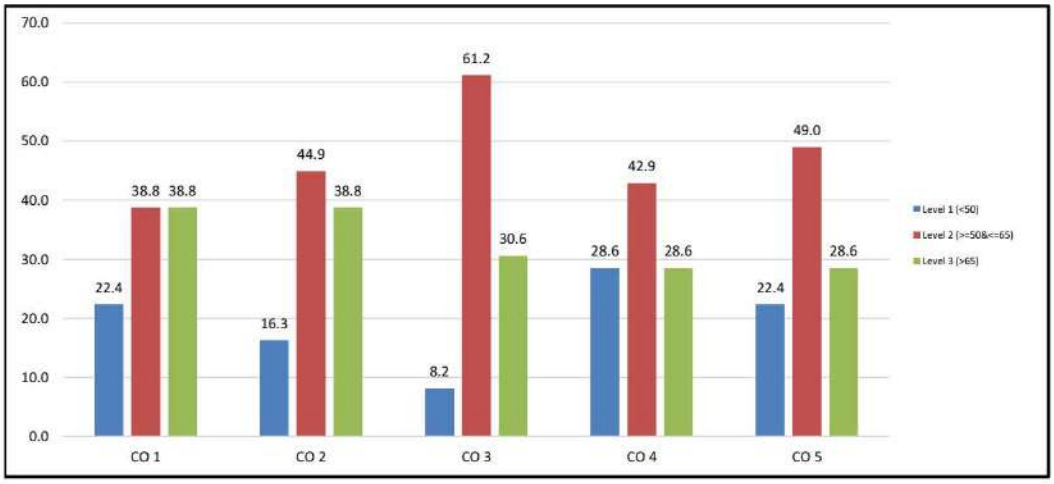
Aruthengavillai, Kallukatti Junction, Azhikal (p.o), Kanyakumari District - 629 202

Department of Mechanical Engineering

Level of Attainment of Course Outcome

COURSE CODE / NAME : ME8793/Process Planning and Cost Estimation
COURSE HANDLED : Mr. I. P. Rakhesh
ACADEMIC YEAR : 2022 -2023 (Odd) SEMESTER : S7
NUMBER OF STUDENTS : 49

Course Outcomes	Attainment Level of COs					
	Level 1		Level 2		Level 3	
	Count	%	Count	%	Count	%
CO 1	11	22.4	19	38.8	19	38.8
CO 2	8	16.3	22	44.9	19	38.8
CO 3	4	8.2	30	61.2	15	30.6
CO 4	14	28.6	21	42.9	14	28.6
CO 5	11	22.4	24	49.0	14	28.6



Course Outcomes					
	DA	DA (80%)	IA	IA(20%)	TOTAL
CO1	2.163	1.731	2.429	0.486	2.216
CO2	2.224	1.780	2.367	0.473	2.253
CO3	2.224	1.780	2.367	0.473	2.253
CO4	2.000	1.600	2.408	0.482	2.082
CO5	2.061	1.649	2.224	0.445	2.094
Overall Attainment					**2.18**

DA - Direct Assessment for COs

IA - Indirect Assessment for COs

PO ATTAINMENT:

STELLA MARY'S COLLEGE OF ENGINEERING

Aruthengavillai, Kallukatti Junction, Azhikal (p.o), Kanyakumari District - 629 202

Department of Mechanical Engineering

Level of Attainment of Program Outcome

2022 -2023 (Even) S7

Course code / Name of the course	CO'S	AW	PO'S												PSO		
			1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
ME8793/Process Planning and Cost Estimation	CO1	2.216	3	2	2	2					1		1	1	2	1	1
	CO2	2.253	3	3	2	1					1		1	1	2	1	1
	CO3	2.253	3	3	2	2					1		1	1	2	1	1
	CO4	2.082	3	3	2	2					1		1	1	2	1	1
	CO5	2.094	3	3	2	2					1		1	1	2	1	1

PO'S												PSO		
1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
2.180	2.177	2.180	2.171	0.000	0.000	0.000	0.000	2.180	0.000	2.180	2.180	2.180	2.180	2.180

PO Attainment Calculations

Subject: ME8793 / PROCESS PLANNING AND COST ESTIMATION

Table 10. The PO and PSO attainment for ME8793 / PROCESS PLANNING AND COST ESTIMATION subject is given in the above table.

Course code / Name of the course	CO'S	AW	PO'S												PSO		
			1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
HS8151 / COMMUNICATIVE ENGLISH	CO1	2.216	3	2	2	2					1		1	1	2	1	1
	CO2	2.253	3	3	2	1					1		1	1	2	1	1
	CO3	2.253	3	3	2	2					1		1	1	2	1	1
	CO4	2.082	3	3	2	2					1		1	1	2	1	1
	CO5	2.094	3	3	2	2					1		1	1	2	1	1
PO Attainment Level			2.180	2.177	2.180	2.171	0.000	0.000	0.000	0.000	2.180	0.000	2.180	2.180	2.180	2.180	2.180

Sample Calculation for PO2 Attainment:

$$\text{PO2 Value} = \frac{[(CO1*CO1PO2) + (CO2*CO2PO2) + (CO3*CO3PO2) + (CO4*CO4PO2) + (CO5*CO5PO2)]}{\text{Mapping of } (CO1PO2+CO2PO2+CO3PO2+CO4PO2+CO5PO2)}$$

$$\text{PO2 Value} = \frac{[(2.216*2) + (2.253*3) + (2.253*3) + (2.082*3) + (2.094*3)}{(2+3+3+3+3)} = \frac{30.478}{14} = 2.177$$

INDIRECT CO ATTAINMENT: (Laboratory Courses)

STELLA MARY'S COLLEGE OF ENGINEERING

Aruthengavillai, Kallukatti Junction, Azhikal (p.o), Kanyakumari District - 629 202

DEPARTMENT OF MECHANICAL ENGINEERING

INDIRECT SURVEY

COURSE CODE / NAME : ME8511 /Kinematics and Dynamics Laboratory

COURSE HANDLED : Mr. P. Vijayan

ACADEMIC YEAR : 2021 -2022 (Odd) SEMESTER : S5

Number of Student: 49

Cos	Strong	Medium	Low	Calculation for CO	CO Attainment	Average INDIRECT Attainment
CO1	32	12	5	125	2.551	2.3755
CO2	21	26	2	117	2.388	
CO3	25	18	6	117	2.388	
CO4	18	24	7	109	2.224	
CO5	23	19	7	114	2.327	
TOTAL					11.88	

CO ATTAINMENT CALCULATION: (Laboratory Courses)

STELLA MARY'S COLLEGE OF ENGINEERING
Department of Mechanical Engineering
Course Outcome and Program Outcome: Attainment

COURSE CODE / NAME : MES511 /Kinematics and Dynamics Laboratory
COURSE HANDLED : Mr. P. Vijayan
ACADEMIC YEAR : 2021 -2022 (Odd)
SEMESTER : S5

S. No	Reg. No.	GRADE	External	Internal I	Internal II	Mid - I				Mid - II				Internals					Externals					Total																					
						Day to Day Evaluation	Lab Marks	Viva Voice	Total	Day to Day Evaluation	Lab Marks	Viva Voice	Total	CO1	CO2	CO3	CO4	CO5	CO1	CO2	CO3	CO4	CO5	CO1					CO2					CO3					CO4					CO5				
						10 M	10 M	5 M	25	10 M	10 M	5 M	25	10	10	10	10	10	20	20	20	20	20	I	E	T	Att	AW	M	E	T	Att	AW	I	E	T	Att	AW	I	E	T	Att	AW	I	E	T	Att	AW
1	963519114001	U	0	20	20	8	10	2	20	8	10	2	20	9	9	9	9	4	0	0	0	0	0	40	0	40	NO	0	40	0	40	NO	0	40	0	40	NO	0	40	0	40	NO	0	20	0	20	NO	0
2	963519114002	UA	0	20	20	8	10	2	20	8	10	2	20	9	9	9	9	4	0	0	0	0	0	40	0	40	NO	0	40	0	40	NO	0	40	0	40	NO	0	40	0	40	NO	0	20	0	20	NO	0
3	963519114003	O	100	25	25	10	10	5	25	10	10	5	25	10	10	10	10	10	20	20	20	20	20	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3
4	963519114004	A	80	24	23	10	10	4	24	10	10	3	23	10	10	10	10	7	16	16	16	16	16	40	50	90	YES	3	40	50	90	YES	3	40	50	90	YES	3	40	50	90	YES	3	30	50	80	YES	3
5	963519114005	A+	90	24	24	10	10	4	24	10	10	4	24	10	10	10	10	8	18	18	18	18	18	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3
6	963519114006	A	80	24	23	10	10	4	24	10	10	3	23	10	10	10	10	7	16	16	16	16	16	40	50	90	YES	3	40	50	90	YES	3	40	50	90	YES	3	40	50	90	YES	3	30	50	80	YES	3
7	963519114007	UA	0	20	20	8	10	2	20	8	10	2	20	9	9	9	9	4	0	0	0	0	0	40	0	40	NO	0	40	0	40	NO	0	40	0	40	NO	0	40	0	40	NO	0	20	0	20	NO	0
8	963519114008	A	80	24	23	10	10	4	24	10	10	3	23	10	10	10	10	7	16	16	16	16	16	40	50	90	YES	3	40	50	90	YES	3	40	50	90	YES	3	40	50	90	YES	3	30	50	80	YES	3
9	963519114009	O	100	25	25	10	10	5	25	10	10	5	25	10	10	10	10	10	20	20	20	20	20	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3
10	963519114010	A+	90	24	24	10	10	4	24	10	10	4	24	10	10	10	10	8	18	18	18	18	18	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3
11	963519114011	A+	90	24	24	10	10	4	24	10	10	4	24	10	10	10	10	8	18	18	18	18	18	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3
12	963519114013	A	80	24	23	10	10	4	24	10	10	3	23	10	10	10	10	7	16	16	16	16	16	40	50	90	YES	3	40	50	90	YES	3	40	50	90	YES	3	40	50	90	YES	3	30	50	80	YES	3
13	963519114014	A	80	24	23	10	10	4	24	10	10	3	23	10	10	10	10	7	16	16	16	16	16	40	50	90	YES	3	40	50	90	YES	3	40	50	90	YES	3	40	50	90	YES	3	30	50	80	YES	3
14	963519114016	U	0	20	20	8	10	2	20	8	10	2	20	9	9	9	9	4	0	0	0	0	0	40	0	40	NO	0	40	0	40	NO	0	40	0	40	NO	0	40	0	40	NO	0	20	0	20	NO	0
15	963519114017	U	0	20	20	8	10	2	20	8	10	2	20	9	9	9	9	4	0	0	0	0	0	40	0	40	NO	0	40	0	40	NO	0	40	0	40	NO	0	40	0	40	NO	0	20	0	20	NO	0
16	963519114019	A	80	24	23	10	10	4	24	10	10	3	23	10	10	10	10	7	16	16	16	16	16	40	50	90	YES	3	40	50	90	YES	3	40	50	90	YES	3	40	50	90	YES	3	30	50	80	YES	3
17	963519114020	UA	0	20	20	8	10	2	20	8	10	2	20	9	9	9	9	4	0	0	0	0	0	40	0	40	NO	0	40	0	40	NO	0	40	0	40	NO	0	40	0	40	NO	0	20	0	20	NO	0
18	963519114021	A	80	24	23	10	10	4	24	10	10	3	23	10	10	10	10	7	16	16	16	16	16	40	50	90	YES	3	40	50	90	YES	3	40	50	90	YES	3	40	50	90	YES	3	30	50	80	YES	3
19	963519114023	UA	0	20	20	8	10	2	20	8	10	2	20	9	9	9	9	4	0	0	0	0	0	40	0	40	NO	0	40	0	40	NO	0	40	0	40	NO	0	40	0	40	NO	0	20	0	20	NO	0
20	963519114024	A	80	24	23	10	10	4	24	10	10	3	23	10	10	10	10	7	16	16	16	16	16	40	50	90	YES	3	40	50	90	YES	3	40	50	90	YES	3	40	50	90	YES	3	30	50	80	YES	3
21	963519114025	U	0	20	20	8	10	2	20	8	10	2	20	9	9	9	9	4	0	0	0	0	0	40	0	40	NO	0	40	0	40	NO	0	40	0	40	NO	0	40	0	40	NO	0	20	0	20	NO	0
22	963519114026	O	100	25	25	10	10	5	25	10	10	5	25	10	10	10	10	10	20	20	20	20	20	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3
23	963519114027	UA	0	20	20	8	10	2	20	8	10	2	20	9	9	9	9	4	0	0	0	0	0	40	0	40	NO	0	40	0	40	NO	0	40	0	40	NO	0	40	0	40	NO	0	20	0	20	NO	0
24	963519114028	A+	90	24	24	10	10	4	24	10	10	4	24	10	10	10	10	8	18	18	18	18	18	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3
25	963519114029	U	0	20	20	8	10	2	20	8	10	2	20	9	9	9	9	4	0	0	0	0	0	40	0	40	NO	0	40	0	40	NO	0	40	0	40	NO	0	40	0	40	NO	0	20	0	20	NO	0
26	963519114030	B+	70	22	22	10	10	2	22	10	10	2	22	10	10	10	10	4	14	14	14	14	14	40	50	90	YES	3	40	50	90	YES	3	40	50	90	YES	3	40	50	90	YES	3	20	50	70	YES	2
27	963519114031	O	100	25	25	10	10	5	25	10	10	5	25	10	10	10	10	10	20	20	20	20	20	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3
28	963519114032	A+	90	24	24	10	10	4	24	10	10	4	24	10	10	10	10	8	18	18	18	18	18	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3
29	963519114033	O	100	25	25	10	10	5	25	10	10	5	25	10	10	10	10	10	20	20	20	20	20	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3
30	963519114035	U	0	20	20	8	10	2	20	8	10	2	20	9	9	9	9	4	0	0	0	0	0	40	0	40	NO	0	40	0	40	NO	0	40	0	40	NO	0	40	0	40	NO	0	20	0	20	NO	0
31	963519114036	U	0	20	20	8	10	2	20	8	10	2	20	9	9	9	9	4	0	0	0	0	0	40	0	40	NO	0	40	0	40	NO	0	40	0	40	NO	0	40	0	40	NO	0	20	0	20	NO	0

32	963519114038	O	100	25	25	10	10	5	25	10	10	5	25	10	10	10	10	10	20	20	20	20	20	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3
33	963519114039	UA	0	20	20	8	10	2	20	8	10	2	20	9	9	9	9	4	0	0	0	0	0	40	0	40	NO	0	40	0	40	NO	0	40	0	40	NO	0	40	0	40	NO	0	20	0	20	NO	0
34	963519114040	O	100	25	25	10	10	5	25	10	10	5	25	10	10	10	10	10	20	20	20	20	20	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3
35	963519114041	O	100	25	25	10	10	5	25	10	10	5	25	10	10	10	10	10	20	20	20	20	20	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3
36	963519114301	O	100	25	25	10	10	5	25	10	10	5	25	10	10	10	10	10	20	20	20	20	20	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3
37	963519114302	A+	90	24	24	10	10	4	24	10	10	4	24	10	10	10	10	8	18	18	18	18	18	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3
38	963519114303	U	0	20	20	8	10	2	20	8	10	2	20	9	9	9	9	4	0	0	0	0	0	40	0	40	NO	0	40	0	40	NO	0	40	0	40	NO	0	40	0	40	NO	0	20	0	20	NO	0
39	963519114304	A	80	24	23	10	10	4	24	10	10	3	23	10	10	10	10	7	16	16	16	16	16	40	50	90	YES	3	40	50	90	YES	3	40	50	90	YES	3	40	50	90	YES	3	30	50	80	YES	3
40	963519114305	A+	90	24	24	10	10	4	24	10	10	4	24	10	10	10	10	8	18	18	18	18	18	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3
41	963519114306	O	100	25	25	10	10	5	25	10	10	5	25	10	10	10	10	10	20	20	20	20	20	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3
42	963519114307	A	80	24	23	10	10	4	24	10	10	3	23	10	10	10	10	7	16	16	16	16	16	40	50	90	YES	3	40	50	90	YES	3	40	50	90	YES	3	40	50	90	YES	3	30	50	80	YES	3
43	963519114308	A+	90	24	24	10	10	4	24	10	10	4	24	10	10	10	10	8	18	18	18	18	18	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3
44	963519114309	A	80	24	23	10	10	4	24	10	10	3	23	10	10	10	10	7	16	16	16	16	16	40	50	90	YES	3	40	50	90	YES	3	40	50	90	YES	3	40	50	90	YES	3	30	50	80	YES	3
45	963519114310	B+	70	22	22	10	10	2	22	10	10	2	22	10	10	10	10	4	14	14	14	14	14	40	50	90	YES	3	40	50	90	YES	3	40	50	90	YES	3	40	50	90	YES	3	20	50	70	YES	2
46	963519114311	A+	90	24	24	10	10	4	24	10	10	4	24	10	10	10	10	8	18	18	18	18	18	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3
47	963519114312	O	100	25	25	10	10	5	25	10	10	5	25	10	10	10	10	10	20	20	20	20	20	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3	40	60	100	YES	3
48	963519114313	B+	70	23	22	10	10	3	23	10	10	2	22	10	10	10	10	5	14	14	14	14	14	40	50	90	YES	3	40	50	90	YES	3	40	50	90	YES	3	40	50	90	YES	3	20	50	70	YES	2
49	963519114314	A	80	24	23	10	10	4	24	10	10	3	23	10	10	10	10	7	16	16	16	16	16	40	50	90	YES	3	40	50	90	YES	3	40	50	90	YES	3	40	50	90	YES	3	30	50	80	YES	3
																												2.143					2.143					2.143					2.143					2.082

CO ATTAINMENT: (Laboratory Courses)

STELLA MARY'S COLLEGE OF ENGINEERING

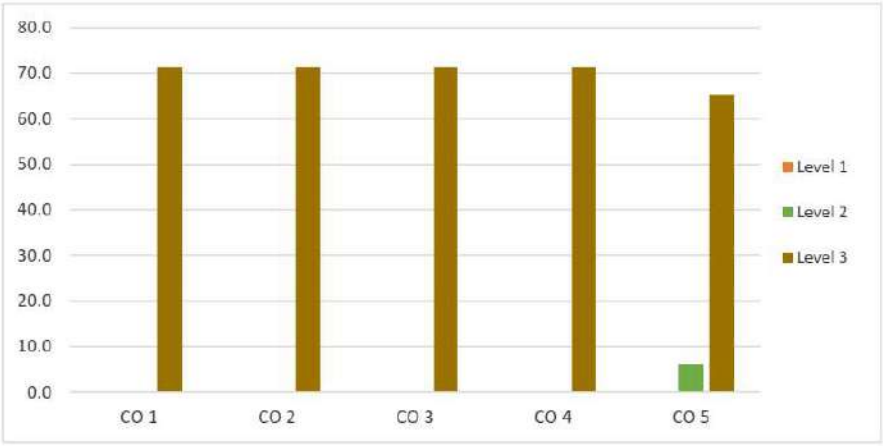
Aruthengavillai, Kallukatti Junction, Azhikal (p.o), Kanyakumari District - 629 202

Department of Mechanical Engineering

Level of Attainment of Course Outcome

COURSE CODE / NAME : ME8511 /Kinematics and Dynamics Laboratory
COURSE HANDLED : Mr. P. Vijayan
ACADEMIC YEAR : 2021 -2022 (Odd)
NUMBER OF STUDENTS : 49

Course Outcomes	Attainment Level of COs					
	Level 1		Level 2		Level 3	
	Count	%	Count	%	Count	%
CO 1	0	0.0	0	0.0	35	71.4
CO 2	0	0.0	0	0.0	35	71.4
CO 3	0	0.0	0	0.0	35	71.4
CO 4	0	0.0	0	0.0	35	71.4
CO 5	0	0.0	3	6.1	32	65.3



	Course Outcomes				
	DA	**DA (80%)**	**IA**	**IA (20%)**	**Total**
CO 1	2.143	1.714	2.551	0.510	2.224
CO 2	2.143	1.714	2.388	0.478	2.192
CO 3	2.143	1.714	2.388	0.478	2.192
CO 4	2.143	1.714	2.224	0.445	2.159
CO 5	2.082	1.665	2.327	0.465	2.131
Overall Attainment					**2.18**

DA - Direct Assessment for COs
IA - Indirect Assessment for COs

PO ATTAINMENT CALCULATION: (Laboratory Courses)

STELLA MARY'S COLLEGE OF ENGINEERING

Aruthengavillai, Kallukatti Junction, Azhikal (p.o), Kanyakumari District - 629 202

Department of Mechanical Engineering

Level of Attainment of Program Outcome

Course code / Name of the course	CO'S	AW	PO'S											PSO		
			1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
ME8511 /Kinematics and Dynamics Laboratory	CO1	2.224	3	1	1	1	1						1	1	2	2	1
	CO2	2.192	3	2	1	2	1						1	1	2	2	1
	CO3	2.192	3	2	1	2	1						1	1	2	2	1
	CO4	2.159	3	2	1	2	1						1	1	2	2	1
	CO5	2.131	3	2	1	2	1						1	1	2	2	1

	PO'S												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
AI	2.180	2.175	2.180	2.175	2.180	0.000	0.000	0.000	0.000	0.000	2.180	2.180	2.180	2.180	2.180

INDIRECT CO ATTAINMENT: (Project Work)

STELLA MARY'S COLLEGE OF ENGINEERING

Aruthengavillai, Kallukatti Junction, Azhikal (p.o), Kanyakumari District - 629 202

DEPARTMENT OF MECHANICAL ENGINEERING

INDIRECT SURVEY

COURSE CODE / NAME : ME8811 /Project Work

COURSE HANDLED : Dr. J. Jenix Rino

ACADEMIC YEAR : 2022 -2023 (Even) SEMESTER : S8

Number of Student: 49

Cos	Strong	Medium	Low	Calculation for CO	CO Attainment	Average INDIRECT Attainment
CO1	28	19	2	124	2.531	
CO2	30	18	1	127	2.592	
CO3	28	16	5	121	2.469	
CO4	24	23	2	120	2.449	**2.5020**
CO5	28	16	5	121	2.469	
TOTAL					12.51	

CO ATTAINMENT CALCULATION: (Project Work)

STELLA MARY'S COLLEGE OF ENGINEERING
Department of Mechanical Engineering
Course Outcome and Program Outcome: Attainment

COURSE CODE / NAME : ME8811 /Project Work
COURSE HANDLED : Dr. J. Jenix Rino
ACADEMIC YEAR : 2022 -2023 (Even)
SEMESTER : S8

S. No	Reg. No.	Review-1 (15marks)	Review-2 (15 marks)	Review-3 (20 marks)	Internal	GRADE	External	Internals					Externals					Total																			
								CO1	CO2	CO3	CO4	CO5	CO1	CO2	CO3	CO4	CO5	CO1				CO2				CO3				CO4				CO5			
								10	10	10	10	10	20	20	20	20	20	I	E	T	AW	I	E	T	AW	I	E	T	AW	I	E	T	AW	I	E	T	AW
1	963519114001	15	15	20	50	B	60	10	10	10	10	10	20	20	20	20	20	40	60	100	3	40	60	100	3	40	60	100	3	40	60	100	3	40	60	100	3
2	963519114002	15	15	20	50	B	60	10	10	10	10	10	12	12	12	12	12	40	40	80	2	40	40	80	2	40	40	80	2	40	40	80	2	40	40	80	2
3	963519114003	12	12	16	40	A	80	8	8	8	8	8	16	16	16	16	16	40	50	90	3	40	50	90	3	40	50	90	3	40	50	90	3	40	50	90	3
4	963519114004	15	15	20	50	B+	70	10	10	10	10	10	14	14	14	14	14	40	50	90	3	40	50	90	3	40	50	90	3	40	50	90	3	40	50	90	3
5	963519114005	12	12	16	40	B+	70	8	8	8	8	8	14	14	14	14	14	40	50	90	3	40	50	90	3	40	50	90	3	40	50	90	3	40	50	90	3
6	963519114006	15	15	20	50	A	80	10	10	10	10	10	16	16	16	16	16	40	50	90	3	40	50	90	3	40	50	90	3	40	50	90	3	40	50	90	3
7	963519114007	9	9	12	30	B+	70	6	6	6	6	6	14	14	14	14	14	30	50	80	2	30	50	80	2	30	50	80	2	30	50	80	2	30	50	80	2
8	963519114008	15	15	20	50	A	80	10	10	10	10	10	16	16	16	16	16	40	50	90	3	40	50	90	3	40	50	90	3	40	50	90	3	40	50	90	3
9	963519114009	15	15	20	50	B	60	10	10	10	10	10	12	12	12	12	12	40	40	80	2	40	40	80	2	40	40	80	2	40	40	80	2	40	40	80	2
10	963519114010	15	15	20	50	A	80	10	10	10	10	10	16	16	16	16	16	40	50	90	3	40	50	90	3	40	50	90	3	40	50	90	3	40	50	90	3
11	963519114011	12	12	16	40	B	60	8	8	8	8	8	12	12	12	12	12	40	40	80	2	40	40	80	2	40	40	80	2	40	40	80	2	40	40	80	2
12	963519114013	12	12	16	40	B+	70	8	8	8	8	8	14	14	14	14	14	40	50	90	3	40	50	90	3	40	50	90	3	40	50	90	3	40	50	90	3
13	963519114014	15	15	20	50	B	60	10	10	10	10	10	12	12	12	12	12	40	40	80	2	40	40	80	2	40	40	80	2	40	40	80	2	40	40	80	2
14	963519114016	15	15	20	50	B+	70	10	10	10	10	10	14	14	14	14	14	40	50	90	3	40	50	90	3	40	50	90	3	40	50	90	3	40	50	90	3
15	963519114017	12	12	16	40	U	0	8	8	8	8	8	0	0	0	0	0	40	0	40	0	40	0	40	0	40	0	40	0	40	0	40	0	40	0	40	0
16	963519114019	15	15	20	50	A	80	10	10	10	10	10	16	16	16	16	16	40	50	90	3	40	50	90	3	40	50	90	3	40	50	90	3	40	50	90	3
17	963519114020	15	15	20	50	A	80	10	10	10	10	10	16	16	16	16	16	40	50	90	3	40	50	90	3	40	50	90	3	40	50	90	3	40	50	90	3
18	963519114021	12	12	16	40	B	60	8	8	8	8	8	12	12	12	12	12	40	40	80	2	40	40	80	2	40	40	80	2	40	40	80	2	40	40	80	2
19	963519114023	15	15	20	50	U	0	10	10	10	10	10	0	0	0	0	0	40	0	40	0	40	0	40	0	40	0	40	0	40	0	40	0	40	0	40	0
20	963519114024	15	15	20	50	B+	70	10	10	10	10	10	14	14	14	14	14	40	50	90	3	40	50	90	3	40	50	90	3	40	50	90	3	40	50	90	3
21	963519114025	15	15	20	50	B	60	10	10	10	10	10	12	12	12	12	12	40	40	80	2	40	40	80	2	40	40	80	2	40	40	80	2	40	40	80	2
22	963519114026	15	15	20	50	A	80	10	10	10	10	10	16	16	16	16	16	40	50	90	3	40	50	90	3	40	50	90	3	40	50	90	3	40	50	90	3
23	963519114027	15	15	20	50	UA	0	10	10	10	10	10	0	0	0	0	0	40	0	40	0	40	0	40	0	40	0	40	0	40	0	40	0	40	0	40	0
24	963519114028	15	15	20	50	B+	70	10	10	10	10	10	14	14	14	14	14	40	50	90	3	40	50	90	3	40	50	90	3	40	50	90	3	40	50	90	3
25	963519114029	15	15	20	50	B+	70	10	10	10	10	10	14	14	14	14	14	40	50	90	3	40	50	90	3	40	50	90	3	40	50	90	3	40	50	90	3
26	963519114030	12	12	16	40	B	60	8	8	8	8	8	12	12	12	12	12	40	40	80	2	40	40	80	2	40	40	80	2	40	40	80	2	40	40	80	2
27	963519114031	12	12	16	40	B	60	8	8	8	8	8	12	12	12	12	12	40	40	80	2	40	40	80	2	40	40	80	2	40	40	80	2	40	40	80	2
28	963519114032	15	15	20	50	B	60	10	10	10	10	10	12	12	12	12	12	40	40	80	2	40	40	80	2	40	40	80	2	40	40	80	2	40	40	80	2
29	963519114033	15	15	20	50	B	60	10	10	10	10	10	12	12	12	12	12	40	40	80	2	40	40	80	2	40	40	80	2	40	40	80	2	40	40	80	2

30	963519114035	15	15	20	50	U	0	10	10	10	10	10	0	0	0	0	0	40	0	40	0	40	0	40	0	40	0	40	0	40	0	40	0	40	0	40	0
31	963519114036	15	15	20	50	B	60	10	10	10	10	10	12	12	12	12	12	40	40	80	2	40	40	80	2	40	40	80	2	40	40	80	2	40	40	80	2
32	963519114038	9	9	12	30	B+	70	6	6	6	6	6	14	14	14	14	14	30	50	80	2	30	50	80	2	30	50	80	2	30	50	80	2	30	50	80	2
33	963519114039	12	12	16	40	B	60	8	8	8	8	8	12	12	12	12	12	40	40	80	2	40	40	80	2	40	40	80	2	40	40	80	2	40	40	80	2
34	963519114040	15	15	20	50	B	60	10	10	10	10	10	12	12	12	12	12	40	40	80	2	40	40	80	2	40	40	80	2	40	40	80	2	40	40	80	2
35	963519114041	15	15	20	50	B	60	10	10	10	10	10	12	12	12	12	12	40	40	80	2	40	40	80	2	40	40	80	2	40	40	80	2	40	40	80	2
36	963519114301	12	12	16	40	B+	70	8	8	8	8	8	14	14	14	14	14	40	50	90	3	40	50	90	3	40	50	90	3	40	50	90	3	40	50	90	3
37	963519114302	12	12	16	40	B	60	8	8	8	8	8	12	12	12	12	12	40	40	80	2	40	40	80	2	40	40	80	2	40	40	80	2	40	40	80	2
38	963519114303	12	12	16	40	B+	70	8	8	8	8	8	14	14	14	14	14	40	50	90	3	40	50	90	3	40	50	90	3	40	50	90	3	40	50	90	3
39	963519114304	15	15	20	50	U	0	10	10	10	10	10	0	0	0	0	0	40	0	40	0	40	0	40	0	40	0	40	0	40	0	40	0	40	0	40	0
40	963519114305	15	15	20	50	U	0	10	10	10	10	10	0	0	0	0	0	40	0	40	0	40	0	40	0	40	0	40	0	40	0	40	0	40	0	40	0
41	963519114306	12	12	16	40	B	60	8	8	8	8	8	12	12	12	12	12	40	40	80	2	40	40	80	2	40	40	80	2	40	40	80	2	40	40	80	2
42	963519114307	12	12	16	40	B+	70	8	8	8	8	8	14	14	14	14	14	40	50	90	3	40	50	90	3	40	50	90	3	40	50	90	3	40	50	90	3
43	963519114308	9	9	12	30	A	80	6	6	6	6	6	16	16	16	16	16	30	50	80	2	30	50	80	2	30	50	80	2	30	50	80	2	30	50	80	2
44	963519114309	12	12	16	40	B+	70	8	8	8	8	8	14	14	14	14	14	40	50	90	3	40	50	90	3	40	50	90	3	40	50	90	3	40	50	90	3
45	963519114310	15	15	20	50	B	60	10	10	10	10	10	12	12	12	12	12	40	40	80	2	40	40	80	2	40	40	80	2	40	40	80	2	40	40	80	2
46	963519114311	12	12	16	40	B	60	8	8	8	8	8	12	12	12	12	12	40	40	80	2	40	40	80	2	40	40	80	2	40	40	80	2	40	40	80	2
47	963519114312	12	12	16	40	A+	90	8	8	8	8	8	18	18	18	18	18	40	60	100	3	40	60	100	3	40	60	100	3	40	60	100	3	40	60	100	3
48	963519114313	12	12	16	40	A	80	8	8	8	8	8	16	16	16	16	16	40	50	90	3	40	50	90	3	40	50	90	3	40	50	90	3	40	50	90	3
49	963519114314	0	0	0	0	A	80	0	0	0	0	0	16	16	16	16	16	0	50	50	0	0	50	50	0	0	50	50	0	0	50	50	0	0	50	50	0
																					2.143				2.143				2.143				2.143				2.143	

CO ATTAINMENT: (Project Work)

STELLA MARY'S COLLEGE OF ENGINEERING

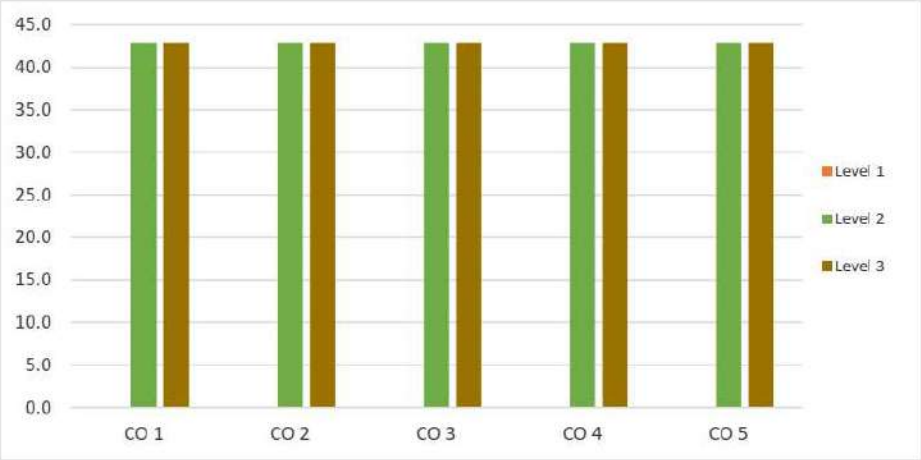
Aruthengavillai, Kallukatti Junction, Azhikal (p.o), Kanyakumari District - 629 202

Department of Mechanical Engineering

Level of Attainment of Course Outcome

COURSE CODE / NAME : ME8811 /Project Work
COURSE HANDLED : Dr. J. Jenix Rino
ACADEMIC YEAR : 2022 -2023 (Even)
NUMBER OF STUDENTS : 49

Course Outcomes	Attainment Level of COs					
	Level 1		Level 2		Level 3	
	Count	%	Count	%	Count	%
CO 1	0	0.0	21	42.9	21	42.9
CO 2	0	0.0	21	42.9	21	42.9
CO 3	0	0.0	21	42.9	21	42.9
CO 4	0	0.0	21	42.9	21	42.9
CO 5	0	0.0	21	42.9	21	42.9



	Course Outcomes				
	DA	DA (80%)	IA	IA (20%)	Total
CO 1	2.143	1.714	2.531	0.506	2.220
CO 2	2.143	1.714	2.592	0.518	2.233
CO 3	2.143	1.714	2.469	0.494	2.208
CO 4	2.143	1.714	2.449	0.490	2.204
CO 5	2.143	1.714	2.469	0.494	2.208
Overall Attainment					**2.21**

DA - Direct Assessment for COs
IA - Indirect Assessment for COs

PO ATTAINMENT: (Project Work)

STELLA MARY'S COLLEGE OF ENGINEERING

Aruthengavillai, Kallukatti Junction, Azhikal (p.o), Kanyakumari District - 629 202

Department of Mechanical Engineering

Level of Attainment of Program Outcome

Course code / Name of the course	CO'S	AW	PO'S												PSO		
			1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
ME8811 /Project Work	CO1	2.220	3	3		2		2	2	3	3	3		3	3	2	2
	CO2	2.233	3	3	3	2	3	1	1		1		2	3	3		3
	CO3	2.208	3	3	3	3	3	2	2		2				3		2
	CO4	2.204	3				1	2	1	3	2	3		3	3		
	CO5	2.208	2	3	3						3		3	3	3		

	PO'S												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
AI	2.215	2.217	2.216	2.219	2.218	2.214	2.216	2.212	2.213	2.212	2.218	2.216	2.215	2.220	2.222

CO ATTAINMENT FOR ALL COURSES (BATCH 2019-2023):

STELLA MARY'S COLLEGE OF ENGINEERING

Aruthenganvilai,kallukatti junction,azhikal post, Kanyakumari District-629202

DEPARTMENT OF MECHANICAL ENGINEERING

BATCH 2019 - 2023 (Regulation 17)

	NAME OF THE COURSE	COURSE CODE	COURSE OUTCOME ATTAINMENT
1	Communicative English	HS8151	1.73
2	Engineering Mathematics - I	MA8151	1.97
3	Engineering Physics	PH8151	1.52
4	Engineering Chemistry	CY8151	1.77
5	Problem Solving and Python Programming	GE8151	1.56
6	Engineering Graphics	GE8152	1.83
7	Problem Solving and Python Programming Laboratory	GE8161	2.72
8	Physics and Chemistry Laboratory	BS8161	2.81
9	Technical English	HS8251	2.21
10	Engineering Mathematics - II	MA8251	2.48
11	Materials Science	PH8251	2.44
12	Basic Electrical, Electronics and Instrumentation Engineering	BE8253	2.46
13	Environmental Science and Engineering	GE8291	2.20
14	Engineering Mechanics	GE8292	2.44
15	Engineering Practices Laboratory	GE8261	2.90
16	Basic Electrical, Electronics and Instrumentation Engineering Laboratory	BE8261	2.87
17	Transforms and Partial Differential Equations	MA8353	2.88
18	Engineering Thermodynamics	ME8391	2.87
19	Fluid Mechanics and Machinery	CE8394	2.80
20	Manufacturing Technology – I	ME8351	2.85
21	Electrical Drives and Controls	EE8353	2.86
22	Manufacturing Technology Laboratory – I	ME8361	2.70
23	Computer Aided Machine Drawing	ME8381	2.16
24	Electrical Engineering Laboratory	EE8361	2.12
25	Interpersonal Skills / Listening & Speaking	HS8381	2.91
26	Statistics and Numerical Methods	MA8452	2.61
27	Kinematics of Machinery	ME8492	2.62
28	Manufacturing Technology– II	ME8451	2.53
29	Engineering Metallurgy	ME8491	2.57
30	Strength of Materials for Mechanical Engineers	CE8395	2.63
31	Thermal Engineering– I	ME8493	2.68
32	Manufacturing Technology Laboratory–II	ME8462	2.78
33	Strength of Materials and Fluid Mechanics and Machinery Laboratory	CE8381	2.75
34	Advanced Reading and Writing	HS8461	2.82
35	Thermal Engineering- II	ME8595	2.68
36	Design of Machine Elements	ME8593	2.74
37	Metrology and Measurements	ME8501	2.35

38	Dynamics of Machines	ME8594	2.71
39	Environment and Agriculture	OAI551	2.57
40	Kinematics and Dynamics Laboratory	ME8511	2.18
41	Thermal Engineering Laboratory	ME8512	2.34
42	Metrology and Measurements Laboratory	ME8513	1.98
43	Design of Transmission Systems	ME8651	2.24
44	Computer Aided Design and Manufacturing	ME8691	2.00
45	Heat and Mass Transfer	ME8693	2.39
46	Finite Element Analysis	ME8692	2.19
47	Hydraulics and Pneumatics	ME8694	2.29
48	Automobile Engineering	ME8091	2.11
49	CAD / CAM Laboratory	ME8681	2.69
50	Design and Fabrication Project	ME8682	2.86
51	Professional Communication	HS8581	2.43
52	Power Plant Engineering	ME8792	2.19
53	Process Planning and Cost Estimation	ME8793	2.18
54	Mechatronics	ME8791	2.24
55	Testing of Materials	OML751	2.24
56	Unconventional Machining Processes	ME8073	2.40
57	Non Destructive Testing and Evaluation	ME8097	2.37
58	Simulation and Analysis Laboratory	ME8711	2.44
59	Mechatronics Laboratory	ME8781	2.81
60	Technical Seminar	ME8712	2.88
61	Principles of Management	MG8591	2.77
62	Production Planning and Control	IE8693	2.81
63	Project Work	ME8811	2.21

PO ATTAINMENT FOR ALL COURSES (BATCH 2019-2023):

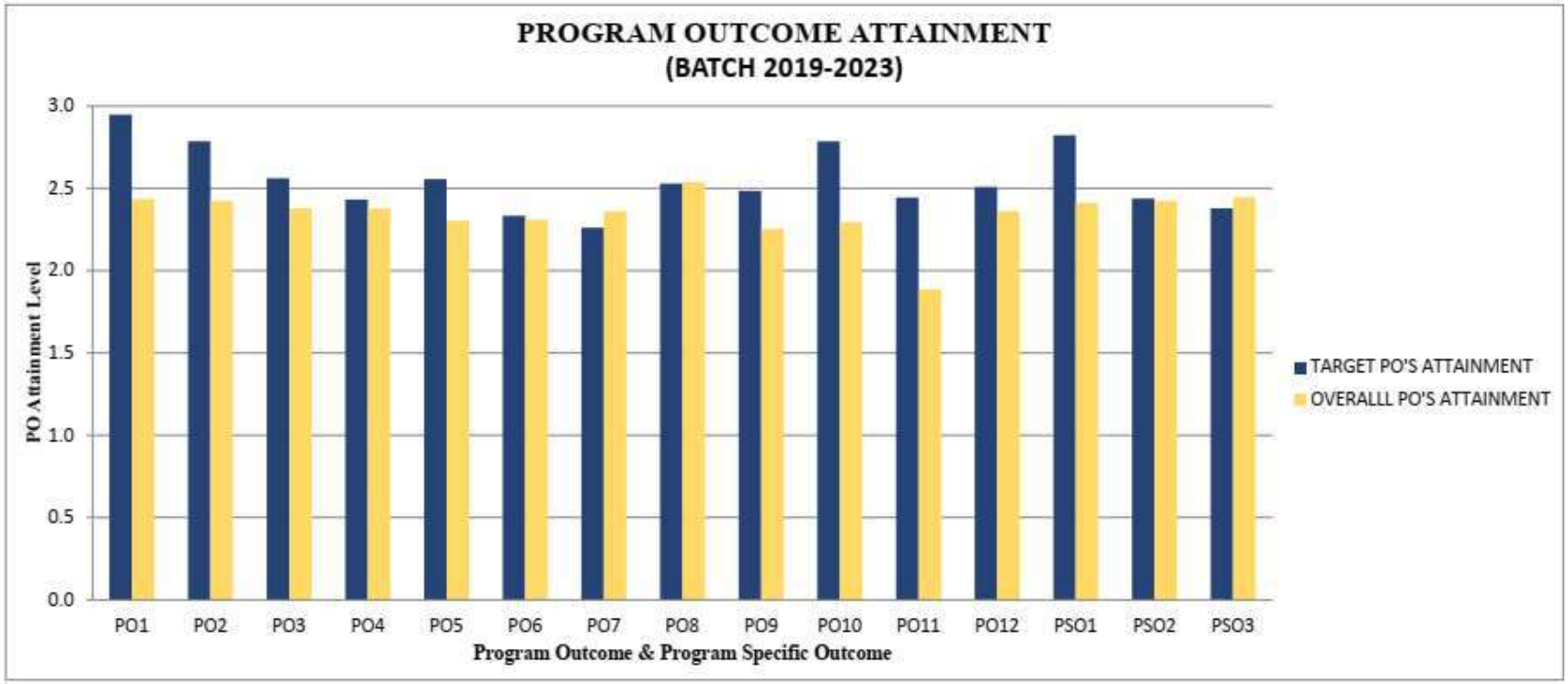
STELLA MARY'S COLLEGE OF ENGINEERING
(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai, Accredited by NAAC and Accredited by NBA(Mech & CSE))
Aruthengankvilai, Kallokatti Junction Azhikal Post, Kanyakumari District-629202, Tamil Nadu, South India
DEPARTMENT OF MECHANICAL ENGINEERING
https://www.stellamaryscoe.edu.in/ Mobile No. : +91 74027 07773

BATCH 2019 - 2023 (Regulation 17)

S. NO	Name of the course	Course code	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-1	PO-11	PO-12	PSO-1	PSO-2	PSO-3
1	Communicative English	HS8151	1.723	1.720	1.720	1.720	1.729	1.729	1.729	1.729	1.723	1.729	1.717	1.729			
2	Engineering Mathematics - I	MA8151	1.968	1.968	1.968	1.968					1.968		1.968	1.968		1.968	
3	Engineering Physics	PH8151	1.522	1.522	1.499	1.503	1.520	1.522						1.410		1.490	
4	Engineering Chemistry	CY8151	1.777	1.784	1.852	1.798		1.815	1.822					1.878		1.772	
5	Problem Solving and Python Programming	GE8151	1.527	1.541	1.480	1.511	1.543						1.529	1.488		1.559	1.559
6	Engineering Graphics	GE8152	1.828	1.828	1.828		1.828					1.828		1.828	1.828		1.828
7	Problem Solving and Python Programming Laboratory	GE8161	2.755	2.733	2.772	2.776	2.752						2.748	2.778		2.721	2.721
8	Physics and Chemistry Laboratory	BS8161	2.807	2.804	2.809	2.807	2.807									2.820	
9	Technical English	HS8251	2.204	2.204	2.204	2.204	2.213	2.204	2.204	2.204	2.207	2.206	2.206	2.206			
10	Engineering Mathematics - II	MA8251	2.477	2.477	2.477	2.477	2.477				2.477		2.477	2.477		2.477	
11	Materials Science	PH8251	2.438	2.438	2.457	2.408	2.442	2.457	2.322					2.551		2.438	
12	Basic Electrical, Electronics and Instrumentation Engineering	BE8253	2.459	2.473	2.459					2.459				2.459	2.459	2.459	
13	Environmental Science and Engineering	GE8291	2.200	2.240	2.272	2.361		2.181	2.176					2.175			
14	Engineering Mechanics	GE8292	2.435	2.435	2.425	2.435	2.435							2.435	2.435	2.435	2.435
15	Engineering Practices Laboratory	GE8261	2.896	2.896			2.896	2.896	2.896					2.896	2.896	2.896	2.896
16	Basic Electrical, Electronics and Instrumentation Engineering Laboratory	BE8261	2.871	2.871	2.871	2.871	2.871			2.871	2.871				2.871	2.871	2.871
17	Transforms and Partial Differential Equations	MA6351	2.832	2.832	2.832	2.832					2.832			2.832		2.832	2.832
18	Engineering Thermodynamics	ME8391	2.878	2.878	2.878	2.878		2.863			2.859		2.856	2.878	2.878	2.878	2.878
19	Fluid Mechanics and Machinery	CE8394	2.786	2.786	2.781	2.787								2.787	2.786	2.789	2.785
20	Manufacturing Technology – I	ME8351	2.894		2.894			2.894	2.900	2.894	2.894			2.894	2.894	2.894	
21	Electrical Drives and Controls	EE8353	2.802	2.802	2.802						2.802			2.802	2.802	2.802	2.802
22	Manufacturing Technology Laboratory – I	ME8361	2.697						2.697		2.697			2.697	2.697	2.697	
23	Computer Aided Machine Drawing	ME8381	2.159	2.159			2.159				2.159	2.159		2.159	2.159	2.159	2.159
24	Electrical Engineering Laboratory	EE8361	2.118	2.118	2.118			2.118						2.118	2.118	2.118	2.118

25	Interpersonal Skills / Listening & Speaking	HS8381		2.909	2.909	2.909		2.909	2.909	2.909	2.909	2.909	2.909	2.909			
26	Statistics and Numerical Methods	MA8452	2.612	2.612	2.612	2.612					2.612			2.612		2.612	2.619
27	Kinematics of Machinery	ME8492	2.619	2.619	2.619									2.619	2.619	2.619	2.619
28	Manufacturing Technology– II	ME8451	2.532	2.532	2.532	2.532	2.532							2.532	2.532	2.532	2.532
29	Engineering Metallurgy	ME8491	2.575	2.575	2.575	2.584	2.616	2.543	2.531	2.543				2.575	2.575	2.575	2.575
30	Strength of Materials for Mechanical Engineers	CE8395	2.633	2.628	2.633	2.633								2.633	2.633	2.633	2.633
31	Thermal Engineering– I	ME8493	2.518	2.518	2.518	2.518								2.518	2.518	2.518	2.518
32	Manufacturing Technology Laboratory–II	ME8462	2.778				2.778		2.778		2.778			2.778	2.778	2.778	2.778
33	Strength of Materials and Fluid Mechanics and Machinery Laboratory	CE8381	2.753	2.753	2.753									2.753	2.753	2.753	2.753
34	Advanced Reading and Writing	HS8461						2.822	2.822	2.822	2.822	2.822	2.822	2.822	0.000	2.822	0.000
35	Thermal Engineering- II	ME8595	2.680	2.680	2.680	2.680					2.680			2.680	2.680	2.680	2.680
36	Design of Machine Elements	ME8593	2.738	2.738	2.738					2.738	2.738			2.738	2.738	2.738	2.738
37	Metrology and Measurements	ME8501	2.352	2.352	2.352	2.352					2.352			2.352	2.352	2.352	2.352
38	Dynamics of Machines	ME8594	2.710	2.710	2.710		2.710			2.710				2.710	2.710	2.710	2.710
39	Environment and Agriculture	OAI551	2.567	2.567	2.567			2.567	2.567	2.567			2.567	2.567	2.567	2.567	
40	Kinematics and Dynamics Laboratory	ME8511	2.180	2.175	2.180	2.175	2.180						2.180	2.180	2.180	2.180	2.180
41	Thermal Engineering Laboratory	ME8512	2.337	2.337	2.337	2.337					2.337			2.337	2.337	2.337	2.337
42	Metrology and Measurements Laboratory	ME8513		1.982	1.982	1.982		1.982	1.982		1.982	1.982	1.982		1.981	1.982	1.982
43	Design of Transmission Systems	ME8651	2.244	2.244	2.244	2.244					2.244			2.244	2.244	2.244	2.244
44	Computer Aided Design and Manufacturing	ME8691	2.002	2.002	2.002	2.002	2.002		2.002		2.002			2.002	2.002	2.002	2.002
45	Heat and Mass Transfer	ME8693	2.392	2.392	2.392	2.392								2.392	2.392	2.392	2.392
46	Finite Element Analysis	ME8692	2.186	2.186	2.186	2.186					2.186			2.186	2.186	2.186	2.186
47	Hydraulics and Pneumatics	ME8694	2.293	2.293	2.293	2.293								2.293	2.293	2.293	2.293
48	Automobile Engineering	ME8091	2.113	2.113	2.113	2.113					2.113			2.113	2.113	2.113	2.113
49	CAD / CAM Laboratory	ME8681	2.694	2.694	2.694	2.694	2.694				2.694			2.694	2.694	2.694	2.694
50	Design and Fabrication Project	ME8682	2.862	2.862	2.862	2.862	2.862			2.862	2.862	2.862	2.862	2.862	2.862	2.862	2.862
51	Professional Communication	HS8581						2.428	2.428	2.428	2.428	2.428	2.428	2.428		2.428	
52	Power Plant Engineering	ME8792	2.190	2.190	2.190	2.190		2.190	2.190			2.190		2.190	2.190	2.190	2.190
53	Process Planning and Cost Estimation	ME8793	2.163	2.159	2.163	2.153					2.163		2.163	2.163	2.163	2.163	2.163
54	Mechatronics	ME8791	2.244	2.244	2.244	2.244		2.244						2.244	2.244	2.244	2.244

55	Testing of Materials	OML751	2.241	2.241	2.241		2.241	2.241						2.241	2.241	2.241	2.241
56	Unconventional Machining Processes	ME8073	2.405		2.405		2.405		2.405		2.405	2.405		2.405	2.405	2.405	2.405
57	Non Destructive Testing and Evaluation	ME8097	2.364	2.369	2.369	2.369			2.369	2.369				2.369	2.369	2.369	2.369
58	Simulation and Analysis Laboratory	ME8711	2.438	2.438	2.438	2.438	2.438							2.438	2.438	2.438	2.438
59	Mechatronics Laboratory	ME8781	2.810	2.792	2.790	2.757	2.780		2.694		2.721			2.742	2.810	2.810	2.810
60	Technical Seminar	ME8712	2.883	2.883	2.883	2.883				2.883	2.883	2.883		2.883			
61	Principles of Management	MG8591			2.774	2.774		2.774	2.774	2.774	2.774	2.774	2.774	2.774		2.774	
62	Production Planning and Control	IE8693	2.807	2.805	2.784		2.822		2.833				2.833		2.807	2.807	2.807
63	Project Work	ME8811	2.215	2.217	2.216	2.219	2.218	2.214	2.216	2.212	2.213	2.212	2.218	2.216	2.215	2.220	2.222
TOTAL SUM			141.2	135.3	138.4	105.5	64.9	49.6	56.2	44.0	82.4	33.4	43.2	143.6	111.4	140.3	110.6
Total Subject Mapped (Number of Non zero Courses)			58	56	57	44	27	21	23	17	33	14	18	59	46	57	46
DIRECT ASSESMENT			2.434	2.416	2.428	2.397	2.406	2.362	2.445	2.587	2.497	2.385	2.402	2.435	2.423	2.462	2.404
DIRECT ASSESMENT 80%			1.947	1.933	1.942	1.918	1.924	1.889	1.956	2.069	1.997	1.908	1.922	1.948	1.938	1.970	1.923
GRADUATE FEEDBACK PO ASSESSMENT			2.900	2.300	2.533	2.500	2.433	2.367	2.733	2.233	2.700	2.267	2.500	1.000	2.633	2.400	2.633
PARENT FEEDBACK PO ASSESSMENT			2.245	2.245	2.265	2.265	2.122	2.388	2.163	2.347	2.306	2.388	2.265	2.245	2.306	2.265	2.224
EMPLOYER FEEDBACK PO ASSESSMENT			3.000	3.000	1.429	1.571	1.857	1.429	1.429	3.000	1.857	3.000	1.857	2.000	2.143	1.857	2.429
ALUMNI FEEDBACK PO ASSESSMENT			2.566	2.151	2.245	1.962	2.226	2.000	2.340	2.170	2.075	2.132	2.208	2.057	2.302	2.094	2.189
INDIRECT PO ASSESSMENT			2.678	2.424	2.118	2.075	2.160	2.046	2.166	2.438	2.235	2.447	2.207	1.825	2.346	2.154	2.369
IN DIRECT ASSESSMENT 20%			0.536	0.485	0.424	0.415	0.432	0.409	0.433	0.488	0.447	0.489	0.441	0.365	0.469	0.431	0.474
OVERALLL ATTAINMENT			**2.483**	**2.418**	**2.366**	**2.332**	**2.356**	**2.298**	**2.390**	**2.557**	**2.444**	**2.397**	**2.363**	**2.313**	**2.407**	**2.400**	**2.397**
90% of Average PO value from articualation matrix			**2.653**	**2.507**	**2.305**	**2.189**	**2.300**	**2.100**	**2.035**	**2.276**	**2.236**	**2.507**	**2.200**	**2.258**	**2.540**	**2.195**	**2.140**
PO ATTAINMENT from previous batches			**2.442**	**2.400**	**2.368**	**2.331**	**2.405**	**2.271**	**2.388**	**2.388**	**2.455**	**2.493**	**2.390**	**2.337**	**2.496**	**2.420**	**2.494**
TARGET			**2.548**	**2.453**	**2.337**	**2.260**	**2.352**	**2.186**	**2.211**	**2.332**	**2.346**	**2.500**	**2.295**	**2.297**	**2.518**	**2.308**	**2.317**


PROGRAM OUTCOME ATTAINMENT
(BATCH 2019-2023)
PO Attainment Level
3.0
2.5
2.0
1.5
1.0
0.5
0.0
PO1
PO2
PO3
PO4
PO5
PO6
PO7
PO8
PO9
PO10
PO11
PO12
PSO1
PSO2
PSO3
Program Outcome & Program Specific Outcome
TARGET PO'S ATTAINMENT
OVERALLL PO'S ATTAINMENT

INDIRECT PO ATTAINMENT

Graduate Feedback Survey:

STELLA MARY'S COLLEGE OF ENGINEERING
(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai & Accredited by NAAC)
Aruthenganvilai, Kallukatti Junction, Azhikal Post Kanyakumari District – 629 202, Tamil Nadu.

GRADUATE EXIT SURVEY

The information you provide on this questionnaire will be kept completely confidential

Name of the Student	
Roll Number	
Department	
Year of Graduation	
Permanent Address	
E-mail address	

Please take a few minutes to answer the following questions. Your answers to the questions and your feedback will assist the department to continue upgrading the program and to better serve its students and the community. The questions need to be answered on a scale of 1 to 3.

PROGRAM OUTCOMES

At this time you should have attained the required professional, technical, and social experience in the program to practice the following twelve program outcomes. Please mark on a scale of 1 to 3.

S. No	Specification	Rubric strength		
		Extremely Satisfied (3)	Satisfied (2)	Some What Satisfied (1)
1	I have gained an in-depth knowledge of mathematics,science and my branch of Engineering.			
2	I have an ability to identify, formulate and solve engineering problems.			
3	I am able to design digital and analog systems pertaining to electrical systems.			
4	I am able to design electrical and electronics circuits and conduct experiments with electrical engineering aswell as to analyze and interpret data.			
5	I had the opportunity to acquire new knowledge to usemodern engineering tools, software and equipment to Analyze problems necessary for engineering practice.			
6	I have an ability to recognize the impact of engineeringon society.			

7	I have an ability to recognize the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.			
8	I had the opportunity to understand professionaland ethical responsibility.			
9	I have an ability to function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.			
10	I am able to communicate effectively in both verbal and written form.			
11	I had Knowledge of contemporary issues to undertake Innovative projects. I have the training necessary tovisualize and work on multi- disciplinary tasks.			
12	I am able to develop confidence for self-education and to understand the value of life-long learning. I had the opportunity to use the techniques and skills to face and succeed in competitive examinations like GATE, GRE,TOEFL, GMAT etc.			
13	The program enhances creative and imaginative Skills required in Mechanical Engineering domain.			
14	The program helps to progress through advanced degree or certificate programs.			
15	The program helps in innovative and entrepreneurship activities with high professional standards.			

Relation of POs and PSOs with questionnaire:

PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
QUESTION	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15

COMMENTS

Make additional comments as you desire.

Thanks for your time!

Date: *Signature of Graduate*

Parent Feedback Survey:

STELLA MARY'S COLLEGE OF ENGINEERING

(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai & Accredited by NAAC)
Aruthenganvilai, Kallukatti Junction, Azhikal Post Kanyakumari District – 629 202, Tamil Nadu.

PARENTS FEEDBACK ON INSTITUTE

PART I: GENERAL INFORMATION (INFRASTRUCTURE AND OTHER FACILITIES)

Response expected on Institute shall be recorded by using 3-point scale as follows:

	QUESTIONNAIRE	Strongly Agree (3)	Moderately Agree (2)	Some What Agree / Disagree (1)
1	Are you satisfied with the performance of your Son/Daughter?			
2	As you satisfied with the improvement in the personality of son/daughter as compared to the time of joining the Institute?			
3	There is improvement in the student's communication skills as compared to the time of joining the Institute?			
4	How well did we do in transforming the student into a good and responsible citizen?			
5	The electiveness in teaching learning process meets expectations of my son/daughter			
6	The Facilities like Transportation / Library / Canteen /Sports / Drinking water / sanitization meet expectation			
7	Extra and co-curricular activities are good			
8	Laboratory/Computing facilities meet our expectation			
9	The Counselling/ Mentoring system adopted in the department is good			
10	The Training and placement activities planned in the department meet our expectations			
11	The ability of your ward to cope with the needs of the curriculum has improved			
12	My level of satisfaction with the institution is high looking as the way my son/daughter is settled			

Relation of POs and PSOs with questionnaire:

PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
QUESTION	Q1	Q5, Q11	Q5	Q5	Q8	Q4	Q6	Q2, Q4	Q2, Q7, Q9	Q3, Q7	Q10	Q1, Q5, Q6, Q9, Q11, Q12	Q11	Q5	Q9

PART- II: INFORMATION OF THE PARENT/ GUARDIAN

Name of the Parent / Guardian	
Relation with the Student	

SIGNATURE OF THE PARENT/GUARDIAN

Alumni Feedback Survey:

STELLA MARY'S COLLEGE OF ENGINEERING

(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai & Accredited by NAAC)

Aruthenganvilai, Kallukatti Junction, Azhikal Post Kanyakumari District – 629 202, Tamil Nadu.

ALUMNI FEEDBACK FORM ON CURRICULUM

Name of the Alumni	
Year of Graduation	
Name of the Program (Mention the branch name)	B.E: MECHANICAL ENGINEERING
Profession and Designation	
Highest qualification	
Email ID	
Contact Number	

Response expected on curriculum shall be recorded by using 3-point scale as follows.

S. No	Particulars	Extremely Satisfied	Satisfied	Some what Satisfied
1	Basic knowledge in mathematics, science, Engineering and humanities.			
2	Ability to identify, formulate and analyze Engineering problems.			
3	Design/development of complex engineering problems and their solutions			
4	Conduct investigations of Complex Problems			

5	Demonstrate the ability to apply advanced technologies to solve contemporary and new problems.			
6	Understanding professional engineering solutions in societal and environmental contexts			
7	Awareness to apply engineering solutions in global, national, and societal contexts			
8	Understanding of professional and ethical responsibilities.			
9	Ability to function as an effective member in multidisciplinary teams			
10	Proficiency in the English language in both communicative and technical forms			
11	Demonstrate the ability to choose and apply appropriate resource management techniques			
12	Capable of self-education and a clear understanding of the value of updating their professional knowledge to engage in life-long learning.			
13	The program enhances creative and imaginative skills required in Electrical Engineering domain.			
14	The program helps to progress through advanced degree or certificate programs			
15	The program helps in innovative and entrepreneurship activities with high professional standards			

Relation of POs and PSOs with questionnaire:

PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
QUESTION	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15

Suggestions for further Improvement

Signature of the Alumni

Employer Feedback Survey:

STELLA MARY'S COLLEGE OF ENGINEERING

(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai & Accredited by NAAC)

Aruthenganvilai, Kallukatti Junction, Azhikal Post Kanyakumari District – 629 202, Tamil Nadu.

EMPLOYER'S FEEDBACK FORM

Name of the Employer	
Designation	
Name of the Company	
Email ID	
Contact Number	
Feedback pertaining to the semester's	B.E.:

Response expected on curriculum shall be recorded by using 3-point scale as follows.

S. No	Particulars	Extremely Satisfied (3)	Satisfied (2)	Some What Satisfied (1)
1	Ability to develop, analyzes, and formulates acceptable solutions to engineering challenges while upholding professional and ethical obligations.			
2	Aptitude for self-education, the capacity to learn new skills, and a firm understanding of the importance of lifelong learning for maintaining professional knowledge			
3	Knowing how to apply professional engineering solutions for sustainable development in societal, national, and international contexts.			
4	Competence for acquiring new skills and applying them in research and development			
5	Fundamental knowledge in maths and science, as well as professional proficiency in both communicative and technical forms			
6	Ability to differentiate between management strategies and the leadership abilities necessary for multidisciplinary teams to work successfully			

Relation of POs and PSOs with questionnaire:

PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
QUESTION	Q1&Q5	Q1	Q3	Q4	Q2&Q4	Q3	Q3	Q1	Q6	Q5	Q6	Q2	Q1,2,3,4	Q2,4	Q1,3,5,6

Suggestions for further Improvement

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_____

Signature of the Employer

CATEGORIZATION OF COURSES:

S. NO	Name of the course	Course code	Credit	Type of Couse
1	Communicative English	HS8151	4	Theory Course (Easy)
2	Engineering Mathematics - I	MA8151	4	Theory Course (Tough)
3	Engineering Physics	PH8151	3	Theory Course (Moderate)
4	Engineering Chemistry	CY8151	3	Theory Course (Moderate)
5	Problem Solving and Python Programming	GE8151	3	Theory Course (Moderate)
6	Engineering Graphics	GE8152	4	Theory Course (Moderate)
7	Problem Solving and Python Programming Laboratory	GE8161	2	Lab Course
8	Physics and Chemistry Laboratory	BS8161	2	Lab Course
9	Technical English	HS8251	4	Theory Course (Easy)
10	Engineering Mathematics - II	MA8251	4	Theory Course (Tough)
11	Materials Science	PH8251	3	Theory Course (Moderate)
12	Basic Electrical, Electronics and Instrumentation Engineering	BE8253	3	Theory Course (Moderate)
13	Environmental Science and Engineering	GE8291	3	Theory Course (Easy)
14	Engineering Mechanics	GE8292	4	Theory Course (Tough)
15	Engineering Practices Laboratory	GE8261	2	Lab Course
16	Basic Electrical, Electronics and Instrumentation Engineering Laboratory	BE8261	2	Lab Course
17	Transforms and Partial Differential Equations	MA6351	4	Theory Course (Moderate)
18	Engineering Thermodynamics	ME8391	4	Theory Course (Tough)
19	Fluid Mechanics and Machinery	CE8394	4	Theory Course (Moderate)
20	Manufacturing Technology – I	ME8351	3	Theory Course (Easy)
21	Electrical Drives and Controls	EE8353	3	Theory Course (Moderate)
22	Manufacturing Technology Laboratory – I	ME8361	2	Lab Course

23	Computer Aided Machine Drawing	ME8381	2	Lab Course
24	Electrical Engineering Laboratory	EE8361	2	Lab Course
25	Interpersonal Skills / Listening & Speaking	HS8381	1	Lab Course
26	Statistics and Numerical Methods	MA8452	4	Theory Course (Tough)
27	Kinematics of Machinery	ME8492	3	Theory Course (Tough)
28	Manufacturing Technology– II	ME8451	3	Theory Course (Moderate)
29	Engineering Metallurgy	ME8491	3	Theory Course (Moderate)
30	Strength of Materials for Mechanical Engineers	CE8395	3	Theory Course (Tough)
31	Thermal Engineering– I	ME8493	3	Theory Course (Moderate)
32	Manufacturing Technology Laboratory–II	ME8462	2	Lab Course
33	Strength of Materials and Fluid Mechanics and Machinery Laboratory	CE8381	2	Lab Course
34	Advanced Reading and Writing	HS8461	1	Lab Course
35	Thermal Engineering- II	ME8595	3	Theory Course (Moderate)
36	Design of Machine Elements	ME8593	3	Theory Course (Tough)
37	Metrology and Measurements	ME8501	3	Theory Course (Easy)
38	Dynamics of Machines	ME8594	4	Theory Course (Tough)
39	Environment and Agriculture	OAI551	3	Theory Course (Easy)
40	Kinematics and Dynamics Laboratory	ME8511	2	Lab Course
41	Thermal Engineering Laboratory	ME8512	2	Lab Course
42	Metrology and Measurements Laboratory	ME8513	2	Lab Course
43	Design of Transmission Systems	ME8651	3	Theory Course (Tough)
44	Computer Aided Design and Manufacturing	ME8691	3	Theory Course (Moderate)
45	Heat and Mass Transfer	ME8693	4	Theory Course (Tough)
46	Finite Element Analysis	ME8692	3	Theory Course (Tough)
47	Hydraulics and Pneumatics	ME8694	3	Theory Course (Moderate)

48	Automobile Engineering	ME8091	3	Theory Course (Easy)
49	CAD / CAM Laboratory	ME8681	2	Lab Course
50	Design and Fabrication Project	ME8682	2	Project Course
51	Professional Communication	HS8581	1	Lab Course
52	Power Plant Engineering	ME8792	3	Theory Course (Easy)
53	Process Planning and Cost Estimation	ME8793	3	Theory Course (Moderate)
54	Mechatronics	ME8791	3	Theory Course (Moderate)
55	Testing of Materials	OML751	3	Theory Course (Easy)
56	Unconventional Machining Processes	ME8073	3	Theory Course (Easy)
57	Non Destructive Testing and Evaluation	ME8097	3	Theory Course (Easy)
58	Simulation and Analysis Laboratory	ME8711	2	Lab Course
59	Mechatronics Laboratory	ME8781	2	Lab Course
60	Technical Seminar	GE6757	1	Lab Course
61	Principles of Management	MG8591	3	Theory Course (Moderate)
62	Production Planning and Control	IE8693	3	Theory Course (Moderate)
63	Project Work	ME8811	10	Project Course

Dr.K.EZHIL VIGNESH
Co-ordinator IQAC
Stella Mary's College of Engineering
Aruthenganvilai,Anhikai Post
Kanyakumari District - 629 202